Color Printing Guide

RIP STATION 5000

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Trade Name—Fiery Server (Printer Controller for Epson)
Model Number—LXFC001
Compliance Test Report Number—M71204A1
Compliance Test Report Date—December 21. 1997
Responsible Party (in USA)—Electronics for Imaging, Inc.
Address—2855 Campus Drive, San Mateo, CA 94403
Telephone—650-524-4300

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Introduction

Welcome to the *Color Printing Guide*. This manual introduces you to the concepts and issues associated with printing to a RIP Station 5000 print device. It also contains application notes that explain how to print to the RIP Station from popular Macintosh and Windows applications.

This manual is one book in a set of documentation that also includes manuals for users and system administrators. All the other manuals should be available at your site—refer to them for a complete description of your documentation.

About this manual

This manual is written for anyone who prints to a RIP Station using popular Macintosh and Windows applications. It goes beyond the mechanics of sending a print job and explains issues that affect the quality of the results, such as:

- Use of color in the document
- Resolution and file formats used for imported images
- Features of ColorWise™ color management performed by the RIP Station
- Effects of print option settings on printed color

Because each application has different options that affect color printing, detailed application notes are included.

Words in bold (for example, **additive color model**), are terms that appear in the Glossary. The Bibliography at the end of this manual provides sources for further investigation of color printing issues.

The phrase “RIP Station color management” refers to the ColorWise color management system built into the RIP Station Color Server.

Tips for success

The built-in ColorWise color management system of the RIP Station ensures that every color job you print looks good. Regardless of the computer you work on, the application you use, and the type of color work you do, your RIP Station print device provides high-quality color output without any special effort on your part.

You can also customize the RIP Station color management system for particular types of projects or environments. The RIP Station provides total flexibility, allowing you to specify color settings on a job-by-job basis.

The following list summarizes the issues you should consider when you create and print a color document.

1. **Maintain print device consistency.**
   (Chapter 2)

2. **Use the Color Reference pages when choosing and defining RGB, CMYK, and PANTONE™ colors in applications.**
   (Chapter 3)

3. **Save raster images at the optimal resolution for your print device.**
   (Chapter 1)

4. **Choose the appropriate settings for these print options (described in Chapter 2):**

   - **RGB Source** (and, for a custom RGB source space, Gamma, Phosphors, and White Point)—affects the output of all RGB data in your document (see page 2-7)
   - **Rendering Style**—determines the type of color effect produced; for example, vibrant colors (such as for presentations) or accurate-match colors (such as for spot colors in logos)
   - **Brightness**—increases or decreases the brightness of all colors in the document
   - **Pure Black Text/Graphics**—determines whether black text and line art in your document are printed as one-color black or four-color black; can eliminate misregistration and blasting problems; minimizes the cost of printing mostly black documents
   - **CMYK Simulation**—lets you use your RIP Station print device as a proofing device for offset press jobs

Chapter 1: Desktop Color Primer

This chapter covers concepts that are basic to printing in color, including:

- The properties of color
- Printing techniques
- Using color effectively
- Raster images and vector images
- Optimizing files for processing and printing
- Workflow scenarios

If you are already familiar with color theory and digital color printing, you can skip to the last section (page 1-10) for tips on optimizing your files for printing.

The properties of color

What we call "color" is really a perceptual ability unique to humans and a small number of animal species. Color theory is an attempt to systematize the properties of color perception, which by nature is relative and changeable. A color appears different depending on the other colors around it, and individuals vary in their abilities to perceive color.

This section introduces concepts that are basic to color theory. You will encounter some of these concepts (such as hue, saturation, and brightness) when you work with color in applications; others provide useful background information. Color is a complex topic, so consider this a starting point for experimentation and further research.

The physics of color

The human eye can see electromagnetic radiation at wavelengths between 400 nanometers (purplish blue) and 700 nanometers (red). This range is called the visible spectrum of light. We see pure **spectral light** as intensely saturated or pure colors. Sunlight at midday, which we perceive as white or neutral light, is composed of light from across the visible spectrum in more or less equal proportions. Shining sunlight

through a prism separates it into its spectral components, resulting in the familiar rainbow of colors (plate 1).

Like the sun, most light sources we encounter in our daily environment emit a mixture of many light wavelengths, although the particular distribution of wavelengths can vary considerably. Light from a tungsten light bulb, for example, contains much less blue light than sunlight. Tungsten light appears white to the human eye which, up to a point, can adjust to the different light sources. However, color objects appear different under tungsten light than they do under sunlight because of the different spectral makeup of the two light sources.

The mixture of light wavelengths emitted by a light source is reflected selectively by different objects. Different mixtures of reflected light appear as different colors. Some of these mixtures appear as relatively saturated colors, but most appear to us as grays or impure hues of a color.

CIE color model

In the 1930s, the Commission Internationale de l'Eclairage (CIE) defined a standard **color space**, a way of defining colors in mathematical terms, to help in the communication of color information. This color space is based on research on the nature of color perception. The CIE chromaticity diagram (plate 2) is a two-dimensional model of color vision. The arc around the top of the horseshoe encompasses the pure, or spectral, colors from blue-violet to red. Although the CIE chromaticity diagram is not perceptually uniform—some areas of the diagram seem to compress color differences relative to others—it is a good tool for illustrating some interesting aspects of color vision.

By mixing any two spectral colors in different proportions, we can create all the colors found on the straight line drawn between them in the diagram. It is possible to create the same gray by mixing blue-green and red light or by mixing yellow-green and blue-violet light. This is possible because of a phenomenon peculiar to color vision called **metamerism**. The eye does not distinguish individual wavelengths of light. Therefore, different combinations of spectral light can produce the same perceived color.

Purple colors, which do not exist in the spectrum of pure light, are found at the bottom of the diagram. Purples are mixtures of red and blue light—the opposite ends of the spectrum.

Hue, saturation, and brightness

A color can be described in terms of three varying characteristics:

- Hue, or tint (the qualitative aspect of a color—red, green, or orange)
- Saturation, or the purity of the color
- Brightness, or relative position between white and black.

While the CIE chromaticity diagram (plate 2) conveys hue and saturation, a three-dimensional color model is required to add the brightness component (plate 3).

Many computer applications include dialog boxes in which you choose colors by manipulating hue, saturation, and brightness. For example, Photoshop uses a square Color Picker (plate 4) which can be reconfigured according to your preference.

Additive and subtractive color systems

Color devices used in desktop publishing and printing *simulate* the range of visible colors using a set of primary colors that are combined to create other colors. There are two methods of creating a range of colors from a set of primary colors. Computer monitors and scanners use the additive color model. Printing technologies, including RIP Station print devices and offset presses, use the **subtractive color model**.

Additive (RGB) color

Color devices that use the additive color model make a range of colors by combining varying amounts of red, green, and blue light. These colors are called the **additive primaries** (plate 5). White is created by adding the maximum amount of red, green, and blue light available. Black occurs wherever all three colors are absent. Grays are created by adding varying amounts of all three colors together. Combining varying amounts of any two of the additive primaries creates a third, saturated hue.

A familiar device that uses this color model is the computer monitor (plate 6). Monitors have red, green, and blue **phosphors** that emit varying amounts of light to display a given color. Scanners create digital representations of colors by measuring their red, green, and blue components through colored filters.

Subtractive (CMY and CMYK) color

The subtractive color model is used in color printing, and in color photographic prints and transparencies. While the additive color model simulates the visible spectrum of color by adding light of three primary hues, the subtractive color model uses a "white" or neutral light source containing light of many wavelengths. Inks, toners, or other **colorants** are used to selectively absorb (subtract) certain wavelengths of light that otherwise would be reflected or transmitted by the media in question.

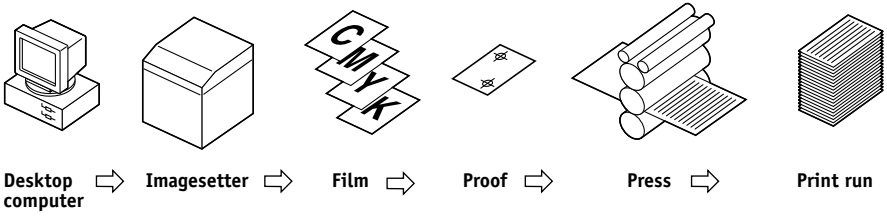
The **subtractive primaries** are cyan, magenta, and yellow; they absorb red, green, and blue light, respectively (plate 7). Combining any two subtractive primaries creates a new color that is relatively pure or saturated. For example, you can make red by combining magenta and yellow, which absorb green and blue light, respectively. White occurs when no colorant is applied. Combining all three subtractive primaries in theory yields black, but due to deficiencies of cyan, magenta, and yellow colorants, combining these three primaries actually yields a muddy brown. Black colorant is added to compensate for the deficiencies of cyan, magenta, and yellow colorants, and consequently color printing uses four **process colors**: **C**yan, **M**agenta, **Y**ellow, and blac**K** (CMYK). The use of black ink helps in producing rich solid blacks and also allows for improved rendition of black text.

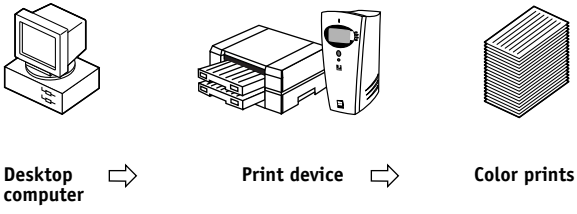
The CMYK colorants used in offset printing and by your RIP Station print device are to some degree transparent. When one layer of colorant is applied on top of another, you see the effect of both. To create a range of intermediary colors, a method is required for varying the amount of each colorant that is applied. A technique called **halftoning** is used in offset printing, while color print devices typically use a proprietary system for applying ink or toner colors that is similar to halftoning.

Printing techniques

Until recently, most color printing was done on printing presses using one of several printing techniques—**offset lithography**, **flexography**, and **gravure**, to name a few. All traditional printing techniques require lengthy preparation before a print run can take place. Short-run color printing, including RIP Station printing, eliminates most of this preparation. By streamlining the process of color printing, the RIP Station makes short print runs economically feasible.

In contemporary offset lithographic printing, digital files from desktop computers are output to an imagesetter, which creates film separations. The film is used to make a **prepress proof**, which is an accurate predictor of the final print job, allowing an opportunity to make corrections before going to press. Once the proof is approved, the printer makes plates from the film and runs the print job on the press.





With a RIP Station, you simply print the file. The RIP Station processes the **PostScript** information in the file and sends **bitmaps** to the print engine. The ease of RIP Station printing makes possible experimentation that would be too costly on press, allowing unlimited fine-tuning of color and design elements.

Halftone and continuous tone devices

Halftoning is used in offset printing to print each process color at a different intensity, allowing millions of different colors to be reproduced using only the four process colors. Depending on the required intensity of a given color, ink is placed on paper in dots of different size. The grid of dots used for each ink color is called a screen. Halftone screens are aligned to unique angles designed to eliminate interference patterns called **moiré** that can arise with halftoning.

Some color print devices are commonly referred to as **continuous tone** (or "contone") devices. They do not use traditional halftone screen patterns and angles. However, they do apply dots (in some cases very elongated dots or lines) of different sizes to paper in a process similar to halftoning.

Even if your color printing is done exclusively on the RIP Station, you will encounter concepts from offset printing if you use high-end graphics applications. For example, color controls in illustration applications such as Illustrator are geared toward specifying color for offset printing using process and **spot colors**. Many applications allow you to specify the screening used for each printing plate.

Using color effectively

The ability to print in color can greatly increase the effectiveness of your message, whether you are printing a presentation or a newsletter, or proofing an ad concept that will later be printed on press. Some potential benefits of using color include:

- Conveying information rapidly by using color cues
- Making use of the emotive aspects of different colors
- Increasing impact and message retention

Color can also be a source of distraction and discord if it is used poorly. This section outlines some tips and concepts that will prove useful as you approach designing color materials.

A few rules of thumb

Try some of the following strategies for creating successful color materials:

- Rather than applying colors indiscriminately, use color to aid comprehension. In presentations, graphs, and charts, use color to highlight patterns and emphasize differences.
- In general, fewer colors work better than many colors.
- Use red as an accent color. Red is particularly effective when used in otherwise monochromatic materials.
- Consider the tastes of your target audience when choosing colors.
- Keep a file of printed color pieces that appeal to you or strike you as effective. Refer to it for ideas when designing your own documents.

Color wheel

A color wheel (plate 8) is a helpful tool for understanding the interrelation of colors. The colors on one side of the color wheel, from magenta to yellow, appear to most people to be warm colors, while those on the other side, from green to blue, appear to be cool. The distance between two colors on the color wheel can help predict how they will appear when seen side by side.

Colors opposite one another on the wheel are called complements (plate 9), and create a striking contrast side by side. This can be the basis for a bold graphical design, but it is an effect you should use with discretion since it can be visually fatiguing. Other bold combinations to consider are split complements (a color and the two colors adjacent to its complement) and triads (three colors evenly spaced on the color wheel). Colors adjacent to one another on the color wheel result in subtle harmonies.

The color wheel simplifies color relationships for the purpose of clarity, showing only saturated or pure colors. Adding the myriad variations of each hue to the palette (more or less saturated, darker or lighter) creates a wealth of possibilities. Taking a pair of complements from the color wheel and varying the saturation and brightness of one or both colors produces a very different result from the pure complements. Combining a light tint of a warm color with a darker shade of its cooler complement often gives pleasing results. Combining a darker shade of a warm color with a light tint of its cooler complement produces an unusual effect you may like.

Once you have mastered the concept of the color wheel, you have a good framework for experimenting with color combinations. Many books targeted at graphic designers show groups of preselected color combinations. Some are organized by themes or moods, and some are based on a **custom color system** such as PANTONE. The more you develop a critical facility for judging color combinations, the more you will be able to trust your own eye for color. The Bibliography at the back of this manual includes books on design.

Color and text

It is not a coincidence that the overwhelming majority of text you see is printed in black on white paper. Text in black on white is highly legible and is not fatiguing to read for extended periods. For many color materials, using black text on a white background and confining color to graphic elements and headings is a good choice.

Color text can add flair to documents printed on paper when used skillfully, and is widely used in presentations. When using color text, avoid dazzling text and background combinations created from primary complements, especially red and cyan or red and blue; they are visually fatiguing and hard to read. Color text is more legible when distinguished from its background by a difference in lightness—for example, dark blue text on a light beige background. In addition, using many different colors in a string of text makes for a confused appearance and is hard to read. However, using a single highlight color is an effective way to draw the reader's eye to selected words. See plate 10 for color text samples.

When using color text, keep in mind that small font sizes typically do not print in color with the same sharpness as in black. In most applications, black text prints exclusively in black ink, while color text usually prints with two or more inks. Any misregistration between the different inks on paper causes color text to lose definition. You can make test prints to find the smallest point size at which color text prints clearly. When using high-end graphics applications that allow you to specify color as percentages of cyan, magenta, yellow, and black, you can create pure cyan or pure magenta text that prints with the same sharpness as black text. (Pure yellow text is extremely hard to read on anything but a dark or complementary background.)

Registration and trapping

With any print device, there is the possibility that the different inks may print slightly out of register, producing distracting gaps between objects. **Trapping** is the process of spreading one color slightly into adjacent colors to compensate for any misregistration that might occur when the file is printed. Depending on the job's makeup, you may need to take trapping into consideration for best printed results. See the Bibliography for sources of information on trapping.

Raster images and vector images

Two broad categories of artwork can be printed from a personal computer to a color printer: raster and vector images (plate 11).

A **raster image**, also referred to as a bitmap, is composed of a grid of **pixels**, each assigned a particular color value. The grid, when sufficiently enlarged, resembles a mosaic made from square tiles. Examples of raster images include scans and images created in painting or pixel-editing applications, such as Photoshop and Painter.

The amount of information found in a raster depends on its **resolution** and **bit depth**. The resolution of a raster describes the density of the pixels and is specified in pixels per inch (ppi). The bit depth is the number of bits of information assigned to each pixel. Black and white rasters require only one bit of information per pixel. For photographic quality color, 24 bits of RGB color information are required per pixel, yielding 256 separate levels of red, green, and blue. For CMYK images, 32 bits per pixel are required.

When printing raster artwork, the quality of the output depends on the resolution of the raster. If the raster's resolution is too low, individual pixels become visible in the printed output as small squares. This effect is sometimes called "pixelation."

In **vector images**, picture elements are defined mathematically as lines or curves between points—hence the term "vector." Picture elements can have solid, **gradient**, or patterned color fills. Vector artwork is created in illustration and drawing applications such as Illustrator and CorelDRAW. Page layout applications such as QuarkXPress also allow you to create simple vector artwork with their drawing tools. PostScript fonts are vector-based as well.

Vector artwork is resolution-independent; it can be scaled to any size without danger of pixels becoming visible in printed output.

Optimizing files for processing and printing

The following sections provide tips on how to create image files that produce the highest possible print quality while minimizing the processing time and disk space they require.

Resolution of raster images

While a 72 ppi raster image appears sharp on a monitor, the same image would likely appear pixelated when printed to the RIP Station. Color print devices are capable of much greater detail than monitors, and require correspondingly higher resolution image files. However, high-resolution files can be large, and therefore cumbersome to transmit over a network, process for printing, store on disk, and edit.

Beyond a certain threshold, a higher image resolution greatly increases file size while having a minimal effect on output quality. The optimal image resolution depends on the resolution of the final print device. Aim for the resolution that optimizes both file size and output quality.

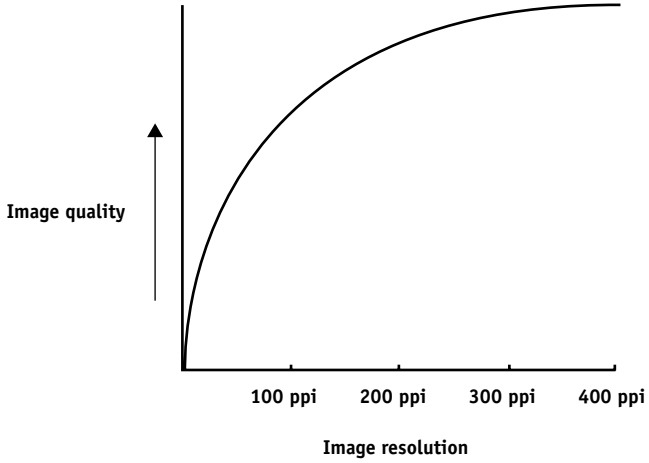
The resolution of a raster, along with its bit depth and physical dimensions, determine its file size. The following table shows the file sizes of color raster images at different dimensions and resolutions.

Image size	File size at:			
	100 ppi	150 ppi	200 ppi	400 ppi
	RGB/CMYK	RGB/CMYK	RGB/CMYK	RGB/CMYK
3" x 4"	0.4/0.5 MB	0.8/1.0 MB	1.4/1.8 MB	5.5/7.3 MB
5" x 7"	1.0/1.3 MB	2.3/3.0 MB	4.0/5.3 MB	16.0/21.4 MB
8.5" x 11"	2.7/3.6 MB	6.0/8.0 MB	10.7/14.3 MB	42.8/57.1 MB
11" x 17"	5.4/7.1 MB	12.0/16.1 MB	21.4/28.5 MB	85.6/114.1 MB

In this table, the shaded areas indicate that 200 ppi is typically the best trade-off between image quality and file size. However, higher resolutions (e.g., 250 to 300 ppi) may be needed for offset printing, when quality is of the utmost importance, or for images containing sharp diagonal lines.

To find the best image resolution for your purposes, make test prints of some raster artwork at different resolutions. Start with a high-resolution image (400 ppi) and save versions at progressively lower resolutions, down to 100 ppi, using a pixel-editing application such as Photoshop. Always save a copy of the original high-resolution version in case you need to revert to it. The high-resolution data cannot be recreated from a lower resolution version.

Print the files and examine the output. You will likely begin to see a marked deterioration in output quality at resolutions below 200 ppi, while above 200 ppi the improvement may be very subtle.



Raster images prepared for offset printing may need to be at higher resolutions than needed for proofing on your RIP Station.

Scaling

Ideally, each raster image should be saved at the *actual* size it will be placed into the document and at the *optimal resolution* for the print device. If the image resolution is correct for the print device, there is no quality advantage to be gained by scaling an image down to a percentage of its actual size. If you scale a large image down to a percentage of its actual size, you incur unnecessary file transfer time because the image data for the entire large image is sent to the printer. If an image is placed multiple times at a markedly different sizes in a document, save a separate version of the image at the correct size for each placement.

If you need to place an image at greater than 100% in a document, remember that the output image resolution is affected. For example, if you scale a 200 ppi image to 200%, the image is printed at 100 ppi.

Workflow scenarios

Color print jobs can be divided into two categories:

- Short-run print jobs for which the RIP Station is the final print device
- Offset print jobs being proofed on the RIP Station

For either type of job, issues of effective color usage, trapping, file optimization, and scaling are important ones. The areas of difference between the workflows for these two types of jobs are outlined in the following sections.

Short-run color printing

For short-run color jobs printed to the RIP Station:

- You can work in either the RGB color model or the CMYK color model (see the application notes). When working with RGB colors, you should take advantage of the color rendering capabilities of the RIP Station (see Chapter 2).
- When choosing or defining colors in your application, use the RIP Station color reference pages to be assured of predictable results (see Chapter 3).
- When printing, choose the appropriate settings for print options that affect color output (see Chapter 2).

Offset printing

For jobs that will be proofed on the RIP Station in preparation for being printed on an offset press:

- Work in the CMYK color model only (see the application notes). All elements in your document, including placed images, must be in the CMYK color model to create film separations for printing.
- When choosing or defining colors in your application, use the RIP Station color reference pages to be assured of predictable results (see Chapter 3).
- If cost is a factor and the document does not contain CMYK images, consider using two or three PANTONE colors, instead of the standard four process colors (see Chapter 3). This reduces the number of film separations and printing plates needed to print the job. Use the PANTONE reference pages to define RGB-equivalents of the PANTONE colors you want to print (see Chapter 3). These color definitions are used only for proofing the job on the RIP Station.
- Choose the appropriate CMYK Simulation setting (see Chapter 2).

Chapter 2: Color Management

This chapter provides information on the factors involved in controlling and managing color output with the objective of achieving predictable color results, including:

- Controlling printed color
- Basics of color management
- RIP Station color management
- Optional ICC color management on Macintosh and Windows computers

Controlling printed color

When working with color materials, whether they be presentations, illustrations, or complicated page designs, you make aesthetic decisions about the colors you use. Once you have decided on your goal, you then need to realize it in print. Your color printing system becomes an ally in this creative process to the extent that you can get results that are *predictable*.

- If you have designed a brochure to print on the RIP Station, you want the printed colors to match the design specification.
- If you are printing presentations on the RIP Station, you want to preserve the vivid colors in the monitor display.
- If you are working with color that will print on press, you want the RIP Station output to match prepress proofs or PANTONE color swatch books.

The type of print job and the final print device, RIP Station or offset press, determine the methodology you use to achieve optimal results.

No matter what your goals are, two hardware factors always impact color print output: print device consistency and the range of colors the print device can print, known as its **gamut**. These factors are covered briefly in this chapter. Creating successful color documents and presentations also requires an understanding of color management software as it is implemented by the RIP Station and on your desktop computer. Most of this chapter is devoted to discussing the various elements of color management that contribute to predictable color results.

Maintaining print device consistency

The factors described below affect print device consistency, as well as color fidelity and overall output quality.

Paper stock and ink

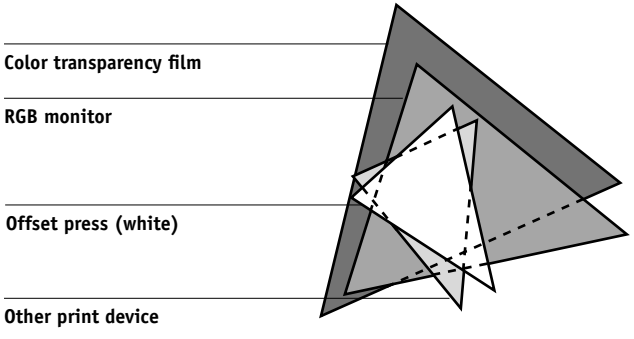
The paper and ink used by your print device can greatly affect printed color. For best results, use the supplies recommended in the *Printer Guide*.

Maintenance

Problems such as **banding** and insufficient amounts of one or more inks may arise if the print device does not receive periodic print head cleaning and alignment. In addition to having it serviced regularly, monitor the condition of your print device by making standard test prints at regular intervals. You can do this easily by printing the RIP Station Test Page. Save the prints and show them to the service technician whenever output densities vary from the norm or other problems appear.

Print device gamut

Different color reproduction techniques have different color capabilities, or gamuts. Color transparency films have comparatively large gamuts, as do color monitors. The color gamut that can be produced using process inks or CMYK inks on paper is smaller. This is why some colors that can be displayed on a color monitor, especially bright saturated colors, cannot be reproduced exactly by your RIP Station print device—nor, for that matter, can they be reproduced on press using process colors. Moreover, different print devices have different gamuts—some colors that your print device can produce cannot be reproduced on an offset press, and vice versa. The following illustration provides a graphical representation of this concept.



You need to account for the gamut of your print device when designing on a color monitor. When printed, colors that fall outside the print device's gamut are "mapped" to printable colors. This process, referred to as **gamut mapping**, takes place when color data is converted or adjusted to meet the color space and gamut requirements of a print device.

The RIP Station is specially designed to perform gamut mapping at high speed with high quality results. It provides these color management features automatically, using either built-in default settings or settings that you specify for a particular print job. For added flexibility, the RIP Station color management system can also be used in combination with color management systems on Macintosh and Windows computers (see page 2-10).

Basics of color management

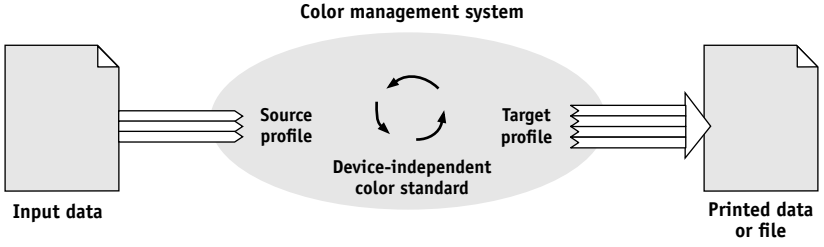
The past several years have seen progress toward standardization in the field of digital color management systems. Both the Macintosh and Windows 95 operating systems now support a standard format developed by the International Color Consortium (ICC). This ICC format is implemented on Macintosh computers in ColorSync™ 2.x and on Windows 95 and Windows NT 4.0 computers in Image Color Matching (ICM). More and more software developers are also incorporating color management systems into high-end applications. The RIP Station provides a custom color management system that can be used independent of, or together with, platform-based and application-based color management tools.

A **color management system**, or CMS, is a "translator" between the color space of the image source (the monitor, or a scanner, for example) and the color space of the target print device. The CMS uses a device-independent color space, such as CIELAB, as its reference point (see page 1-2). To perform its translation, the CMS needs information about the color space of the image source and the color space and gamut of the print device. This information is provided in the form of **profiles**, often created by the makers of the monitor or print device. The end product of a CMS conversion is a printed document or an image file in the color space and gamut needed for a particular print device.

NOTE: If color matching between computer display and printed output is critical, calibrate your monitor as closely as possible to the printed output. For most users, predictability of printed color output is adequate and monitor **calibration** is not necessary. For information on monitor calibration, see your Photoshop or Illustrator documentation.

Color conversion

Before a color document can be printed, the color data in it must be converted to the color space and gamut of the print device. Whether performed by RIP Station color management or by an ICC CMS, the process of converting color data for a print device is the same: the CMS interprets RGB image data according to a specified **source profile** and adjusts both RGB and CMYK data according to a specified target profile.



The source profile defines the RGB color space characteristics of the image's source—characteristics such as the **white point**, the **gamma**, and the type of phosphors used. The target profile defines the color space characteristics and gamut of the target print device. The RIP Station (or the ICC CMS) uses a device-independent color standard to translate between the **source color space** and the target color space.

The RIP Station allows you to specify default and override settings for the source color space information and the target profile information (see "RIP Station color management" on page 2-5). When you use these settings, you do not need to use the features of other color management systems. Your RIP Station user software includes ICC profiles for use with other color management systems if you choose to use them.

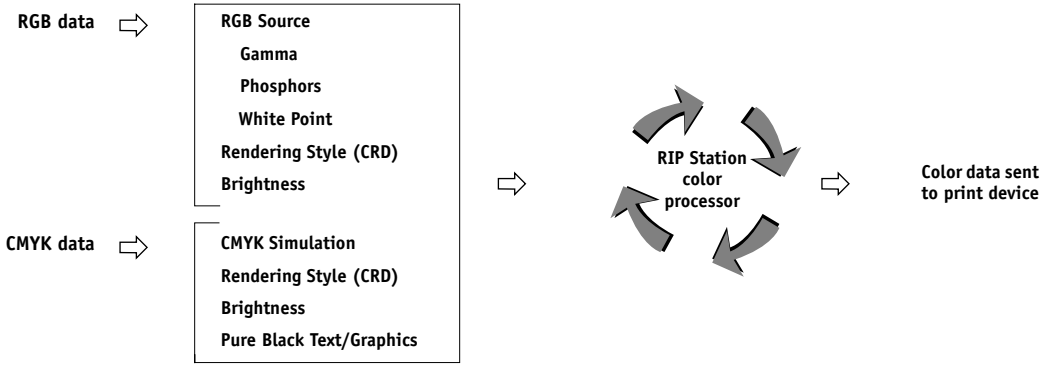
Color management systems can also be used to adjust color data to conform to the gamut of a print device other than the one to which you are printing. This process of simulating another print device is commonly used for proofing jobs that will print on an offset press. The RIP Station simulation feature is described on page 2-9.

RIP Station color management

The RIP Station uses a simple and flexible color architecture that produces excellent color results with default settings. It also allows you to customize your color results using various color controls.

The diagram below illustrates the controls in the RIP Station color management process that affect color data conversions. You access these controls via print options when you send a print job. Most of these options and their settings are described in subsequent sections of this chapter.

The output of the RIP Station color management process is color data that is ready to be sent to the print device. Additional processing may be performed on board the print device before printing begins.



Settings for the following RIP Station options can be specified via print options when you send a job. Some can also be set as defaults by the administrator during RIP Station Setup. Settings specified via print options override the defaults set at Setup.

RIP Station color print option and settings	What it does
RGB Source EFIRGB/sRGB (PC)/Apple Standard/Other/Off (Default set at Setup)	Applies an RGB source space definition to RGB data (see page 2-7). If you choose the Other setting, you can specify particular settings for gamma, phosphors, and white point with the following three options
(Other) Gamma 1.0/1.2/1.4/1.6/1.8/2.0/2.2/2.4/2.6/2.8/3.0	Applies the specified gamma value to the RGB source space definition (see page 2-7). To use this print option, you must choose Other as the RGB Source setting.
(Other) Phosphors Hitachi EBU/Hitachi-Ikegami/NTSC/Radius Pivot/SMPTE/Trinitron	Applies the specified phosphor (monitor type) information to the RGB source space definition (see page 2-7). To use this print option, you must choose Other as the RGB Source setting.
(Other) White Point 5000 K (D50)/5500 K/6500 K (D65)/7500 K/ 9300 K	Applies the specified white point value to the RGB source space definition (see page 2-7). To use this print option, you must choose Other as the RGB Source setting.
Rendering Style Photographic/Presentation/Solid Color (Default set at Setup)	Applies a RIP Station color rendering style (CRD) to RGB data (see page 2-8). This setting is also applied to CMYK data when a CMYK Simulation setting other than None is specified (see page 2-9).
Brightness 85% to 115%	Performs a color adjustment on all color channels to make the printed output lighter or darker.
Pure Black Text/Graphics On/Off	The On setting optimizes the quality of black text and line art output (see page 2-9).
CMYK Simulation SWOP-COM-M/SWOP-COM-F/ Cromalin EuroSTD/DuPont WaterProof/DIC/ Euroscale/Custom-1 through Custom-5/None (Default set at Setup)	Adjusts CMYK color data to simulate an offset press standard or a custom color gamut defined at your site. Choosing None bypasses simulation (see page 2-9). If you choose any setting other than None, specify Solid Color as the Rendering Style setting.

Explanations of how these settings affect your print jobs are provided in subsequent sections of this chapter.

RGB Source

The RGB Source option is used to provide a source color space definition for RGB data in your document. The setting you specify for this option overrides any source color space profiles you may have specified with other color management systems. For example, if you specified a ColorSync System Profile on your Macintosh computer (see page 2-10), the RGB Source setting overrides it. In cases where you don't want this setting to override another specified source color space, choose the Off setting.

- **EFIRGB** specifies a ColorWise-specific source space that can be used to ensure consistent results across different computer platforms.
- **sRGB (PC)** specifies the source space of a generic Windows computer monitor.
- **Apple Standard** specifies the source space of all standard Macintosh computer monitors.
- **Other** allows you to specify custom RGB source settings. If you choose Other as the RGB Source setting, you can choose settings for the Gamma, Phosphors, and White Point options.

If you set RGB Source to Off, PostScript RGB data (such as RGB EPS images) and non-PostScript RGB data (such as RGB TIFF images) are converted differently by the RIP Station color management system.

- PostScript RGB data is converted using the CRD specified by the Rendering Style option (see page 2-8). PostScript RGB data contains its own source color space information which is used as a reference point for the conversion.
- NonPostScript RGB data is converted using a general under-color-removal conversion method. Non-PostScript RGB data does not contain source color space information and so cannot be converted using a CRD.

Rendering styles

The Rendering Style option is used to specify a CRD for color conversions. The following table describes the various **color rendering** styles (**CRD**s) provided with RIP Station software and provides guidelines on when to use each one. Each color rendering style uses a different gamut mapping method, such as Photographic or Solid, designed for a particular kind of color usage.

The ICC rendering styles referred to in the table are settings you can choose when specifying a target profile with an ICC color management system (see the application notes.)

NOTE: Your version of RIP Station software may not include all these color rendering styles, or may include others.

RIP Station rendering style	Best used for	Equivalent ICC rendering style
Photographic—Preserves tonal relationships in images rather than exact colors. This rendering style maps out-of-gamut RGB colors to printable colors in a way that retains differences in lightness. Color accuracy is sacrificed slightly in favor of presenting color relationships in the way the human eye perceives them. Photographic rendering typically gives less saturated output when printing out-of-gamut RGB colors than Solid Color rendering does.	Continuous tone photographs, including scans and images from stock photography CDs	**Image** and **Contrast** and **Perceptual**
Presentation—Creates bright saturated colors. This rendering style does not try to match printed colors precisely to displayed colors but instead provides vibrant, dense colors. Photographic images, however, are treated the same way as by the Photographic rendering style.	Artwork and graphs in presentations and continuous tone photographs	**Saturation** and **Graphics**
Solid Color—Provides best color accuracy and preserves the saturation of displayed colors. This rendering style matches RGB colors to printable equivalents wherever possible and maps out-of-gamut RGB colors to the closest printable colors.	Spot colors and graphic images (**Solid Color rendering** may not be appropriate for printing saturated RGB color blends, since artifacts such as banding may occur)	**Colorimetric**

Pure Black Text/Graphics

The Pure Black Text/Graphics option provides a way to optimize the quality of black text and line art by printing one-color black at the full **density** of your print device. This option can also be used to minimize the amount of ink used when printing documents consisting of a mixture of color and black-only pages.

- With On, black text and line art are printed using only black ink. This setting eliminates the potential for **blasting** and misregistration of colors that exists when using a four-color black.
- With Off, black text and line art are printed using all four colors of ink. This setting should be used when a rich black is desired.

The Pure Black Text/Graphics option affects only black text and line art elements defined in RGB as R0%, G0%, B0%, or in CMYK as C0%, M0%, Y0%, K100%. It does not affect colors in continuous tone images.

The Pure Black Text/Graphics option can be used only when printing composites, not when printing separations.

CMYK Simulation

The CMYK Simulation print option allows you to print press proofs or simulations. This option affects CMYK data only.

The CMYK Simulation setting specifies the offset press standard or other color gamut that you want to simulate. You can also create up to five custom simulations using the Fiery Print Calibrator (see the *User Guide*). For details on the various CMYK Simulation settings, see the *User Guide*.

The CMYK Simulation setting you should specify depends on the press standard for which the CMYK data was separated. For example, for images that were separated for **SWOP**, choose SWOP-Coated as the CMYK Simulation setting. For images that were separated using a custom separation (such as a device-specific separation or a separation produced with an ICC-profile), choose None as the CMYK Simulation setting.

The CMYK Simulation setting also determines whether or not CMYK data is affected by the Rendering Style setting (see page 2-5).

- With a CMYK Simulation other than None, choose Solid Color as the Rendering Style setting.
- With None as the CMYK Simulation, the CMYK data is converted to device-ready color data using a default PostScript conversion scheme.

Optional ICC color management for advanced users

This section describes how the ICC color management systems implemented on Macintosh and Windows platforms can be used in combination with RIP Station color management. You do not need to use the Macintosh or Windows color management systems to get good color printing results—the RIP Station provides its own built-in color management. This information is provided for advanced users with particular customization requirements.

Color management on Macintosh computers

The Macintosh operating system includes the ICC ColorSync 2.x color management system. The AdobePS 8.5.1 printer driver (included in the RIP Station user software) supports ColorSync 2.x features and all other PostScript Level 2 and 3 printing features. You can use the AdobePS printer driver to control color conversions of RGB data with ColorSync profiles. Some PostScript applications also provide independent color management features that use ColorSync profiles.

To use the AdobePS driver to perform color management, choose the ColorSync Color Matching setting and specify a ColorSync printer profile when you print (see page 4-2). With these settings, the AdobePS driver performs color conversions and sends the resulting color data to the RIP Station. For information on color management tools provided with applications, see the application notes.

Source color space profiles

You can specify a ColorSync source color profile for your Macintosh computer with the ColorSync System Profile Control Panel (see the *Setup Guide*). The recommended source color profile for printing to your RIP Station print device is the EFIRGB ICC profile included in your RIP Station user software. The source color space defined by this profile is the same as that defined by the EFIRGB setting of the RGB Source option (see page 2-7).

The RGB Source setting overrides the ColorSync System Profile setting for RGB data sent to the RIP Station. If you do not want the ColorSync profile setting to be overridden, set the RGB Source print option to Off.

The RGB Source setting does *not* override other source profile settings in cases where you use the printer driver or your application's color management system to perform color conversions. For example, if you print using the ColorSync Color Matching setting (as described above), the printer driver performs the color conversion and sends CMYK data to the RIP Station. In another example, if you assign a ColorSync source profile to an RGB image placed in a document, the *application* performs the conversion to CMYK and the assigned source profile is *not* overridden by the RGB Source setting.

Target profiles

The target profile, or printer profile, contains information about the color space and gamut of the target print device. If you use the ColorSync Color Matching setting of the AdobePS driver, you must specify the printer profile that ColorSync will use to perform its color conversions.

Some applications let you assign ColorSync target profiles to RGB images you place in a document (see the application notes). When you print the document, the application performs color conversions on the placed images, using the profiles you specified, and embeds the resulting color data in the document. Three rendering styles are included in a ColorSync profile, each tailored for a specific type of color output (see page 2-8).

See Chapter 4 for information on setting print option settings that affect printed color.

Color management on Windows computers

The Windows 95 and Windows NT 4.0 operating systems include the Image Color Matching (ICM) color management system.

- The AdobePS4 printer driver for Windows 95 (included in your RIP Station user software) supports ICM features and all PostScript Level 2 and 3 printing features.

  With Windows 95, you can instruct the Adobe PS4 driver to perform color management using ICM. To do this, you select the "Use image color matching" option in the Graphics tab of the printer's Properties dialog box. (See your Windows 95 documentation for more information.) With the proper ICM settings, the printer driver performs color conversions and sends the resulting color data to the RIP Station.

- The Microsoft PostScript Level 2 Printer Driver for Windows NT 4.0 does not currently support all ICM features.
- The Windows 3.1x and Windows NT 3.51 operating systems do not support ICM.
- Some PostScript applications also provide independent color management features that use ICM profiles (see the application notes).

Source color space profile

A default source color space is defined for every Windows computer monitor. The RGB Source setting overrides this default source color space (see page 2-7). If you do not want the monitor's default source color space to be overridden, set the RGB Source print option to Off.

The RGB Source setting does *not* override other source profile settings in cases where you use the printer driver or your application's color management system to perform color conversions. For example, if you print with Windows 95 using Image Color Matching (as described above), the printer driver performs the color conversion and sends CMYK data to the RIP Station. In another example, if you assign an ICM source profile to an RGB image placed in a document, the *application* performs the conversion to CMYK and the assigned source profile is *not* overridden by the RGB Source setting. (See the application notes for information on the color management tools available with different applications.)

Target profiles

The target profile, or printer profile, contains information about the color space and gamut of the target print device. If you use the "Use image color matching" option of the Adobe driver for Window 95, you must install the printer profile that ICM will use to perform its color conversions.

Some applications let you assign ICM target profiles to RGB images that you place in a document (see the application notes). When you print the document, the application performs color conversions on the placed images, using the profiles you specified, and embeds the resulting color data in the document. Three rendering styles are included in an ICM profile, each tailored for a specific type of color output (see page 2-8).

See Chapter 4 for information on print option settings that affect printed color.

Chapter 3: Working with Color in Applications

This chapter provides guidelines for defining colors in your documents to produce the results you want. The following topics are covered:

- Factors affecting how you work with color
- Choosing colors with QuickDraw and GDI applications, such as presentation applications and word processing programs
- Choosing colors with PostScript applications, such as page layout programs, illustration programs, and pixel-editing applications

Working with color

The two main factors that influence how you work with color in your documents are the application you use and the final print device.

Applications vary in the methods they provide for choosing colors and in the way they transmit color data to the print device.

- **Office applications** such as presentation software, spreadsheets, and word processing programs use the RGB color model.
- **PostScript applications** such as illustration, pixel-editing, and page layout applications use the CMYK color model.

The type of printing you plan for the document—short-run printing on the RIP Station versus offset press printing—determines the way you define colors as well as the print option settings you choose.

- For short-run printing on the RIP Station, use any type of application and define colors in either RGB or CMYK. Choose the appropriate settings for print options affecting color output (see Chapter 2).
- For offset printing jobs, use a PostScript application and define colors in CMYK. Placed images should also be CMYK. Choose the appropriate settings for print options affecting color output (see Chapter 2).

Color reference pages

Your RIP Station user software includes several types of color reference pages that let you see the range of colors your print device can produce. You can be assured of predictable color results if you use the color reference pages when defining the colors you want to use in your document.

- RGB color reference pages—a Microsoft Word file and a Microsoft PowerPoint file that let you view the colors available in the standard palettes of office applications and see how those colors print on the RIP Station (see page 3-3).
- CMYK color reference pages—a downloadable PostScript file of CMYK color patches in the range of colors your print device can print (see page 3-5).
- PANTONE color reference pages—text files that indicate the closest equivalents of the PANTONE coated and uncoated colors your print device can print (see page 3-6).

Office applications

PostScript printers such as the RIP Station must receive PostScript instructions to print an image or a document. Many applications do not create these PostScript instructions by themselves, and instead rely on the printer driver to create them. Included in this category are most word processors, spreadsheets, and presentation packages. These applications use Apple **QuickDraw** to display and print when running on Macintosh computers; they use the Windows **Graphics Device Interface (GDI)** to display and print when running under Windows. We refer to these QuickDraw and GDI applications as "**office applications**."

All office applications handle color similarly, using the same RGB color model used for the color monitor display. Most office applications allow you to choose colors from a palette of preselected colors; some allow you to add new colors to the palette using a color picker. Although some applications allow you to specify color using the CMY, HSL, and HSV color models, these applications always send RGB color data to the RIP Station. (An exception to this is a CMYK EPS file placed in the document, which is sent as CMYK data.)

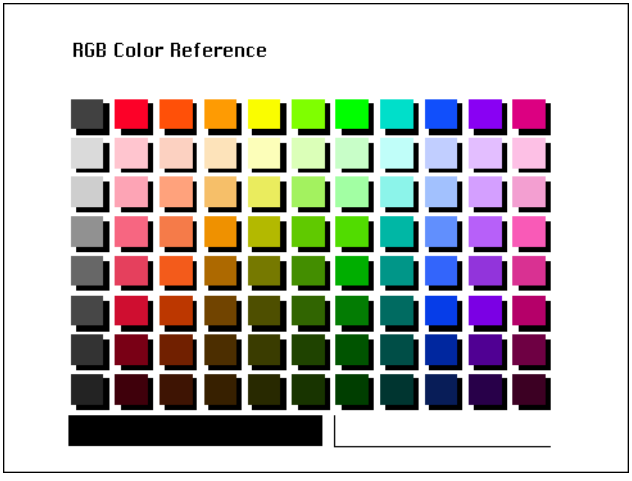
When working with color in office applications, keep in mind that:

- The range of colors that can be displayed in RGB on your monitor is much larger than the range of colors that can be printed on your print device (see page 2-2). When you print the document, out-of-gamut RGB colors are mapped to colors your print device can produce.
- These applications send only RGB data to the RIP Station. You control the **rendering intent** of the color conversion with your selection of a CRD.

  Each CRD uses a different color rendering style, and therefore has a different way of mapping unprintable colors to your print device's color gamut. RIP Station color rendering styles are described on page 2-8.

Choosing colors in office applications

Two RGB color reference pages, a Microsoft Word file and a Microsoft PowerPoint file, are provided with your RIP Station user software. Print these files using different CRDs to see how the colors appear when printed to the RIP Station. For best results, print the color reference page using the same media and CRD you plan to use for your final document. Select the colors you want to use from the printed version of the RGB color reference page and then use those colors in your document.



RGB Color Reference page (Microsoft PowerPoint)

PostScript applications

Most applications used for illustration, pixel editing, and page layout can create the PostScript information they send to PostScript printers or save in PostScript files. Illustrator, Photoshop, PageMaker, QuarkXPress, and FreeHand are all PostScript applications.

PostScript applications work with color in many different ways. Most allow you to choose process colors (by entering a percentage for cyan, magenta, yellow, and black), as well as **named colors** from a custom color system such as PANTONE. When you print composites, these applications send process-color equivalents for named **spot colors** to color print devices. In some applications, you can also choose colors using the RGB, HSB, HSL, or other color models.

Generally, PostScript applications send color information to the RIP Station in CMYK. An exception to this is RGB images placed in the document which are sent directly to the RIP Station (unless you specify special color management settings in your application). In addition, some PostScript applications that allow you to define colors in RGB or other color models can also send the data in those color spaces.

Color controls in PostScript applications are typically designed for printing on an offset press, and some adjustments are required for printing to the RIP Station. Displayed versions of colors you choose in these applications may not match RIP Station output exactly, and named colors may not print accurately on the RIP Station, since these colors typically require custom inks.

Choosing colors in PostScript applications

With PostScript applications, you can create colors using any of the color models supported by the application. All PostScript applications support the CMYK model; some also support the RGB model and other color models based on monitor display values. PostScript applications also allow you to choose named colors using one or more color libraries, such as PANTONE.

The important thing to remember when creating or choosing colors is that the displayed versions of those colors may not match RIP Station output or the output of identically defined colors from other color print devices. For this reason, you should

use swatch color matching to ensure predictable color printing results with the RIP Station or to match your RIP Station color output to colors produced by other print devices.

Swatch color matching

Your RIP Station user software includes downloadable PostScript files of reference pages for CMYK colors and text files indicating RGB values for PANTONE-equivalent colors. By choosing colors from these reference pages and specifying the indicated values, you can be sure of obtaining the same color from your print device.

NOTE: Swatch color matching does not match *monitor* colors to printed colors. For this you must use a color management system and calibrate your monitor to the color output of your print device.

Using the CMYK color reference pages

The CMYK color reference pages, included with your RIP Station user software, let you see how various cyan, magenta, yellow, and black combinations look when printed on your print device. Using the CMYK color reference pages, you can easily determine the CMYK values to specify to obtain the printed colors you want.

The CMYK color reference file is an 11-page letter-size PostScript file.

CMYK color reference page

To use the CMYK color reference pages, download the file using the Fiery Downloader. The printed pages display groups of color patches in graduated combinations of yellow, magenta, and cyan, and smaller patches that include 25, 50, and 75% black. Refer to these pages to pick colors and specify process color values in your application. (For the location of the CMYK color reference file, see the *Setup Guide*. For instructions on using the Fiery Downloader, see the *User Guide*.)

NOTE: If you plan to later print your document on press, you may need to adjust the process values to duplicate the colors from your RIP Station.

Using the PANTONE color reference pages

The PANTONE color reference pages, included with your RIP Station user software, let you determine the nearest RGB values to match a given color in the printed PANTONE Color libraries for coated and uncoated paper. One file provides values for the PANTONE Coated colors; the other provides values for the PANTONE Uncoated colors. These files are text-format files that can be opened and printed with any text-handling application.

To use the PANTONE reference pages, print the files with RGB Source set to Off and Rendering Style set to Solid. (The CMYK Simulation setting is irrelevant.) The printed pages display PANTONE numbers and the RGB values you use to create them. Refer to these pages to specify the appropriate RGB percentages in your application. (For the location of the PANTONE color reference files, see the *Setup Guide*.)

You can supply these pages to all designers who specify PANTONE colors in their applications. Designers can pick PANTONE colors from the book and then specify the colors in their applications by manually entering the RGB values.

CMYK simulation

If you are using the RIP Station to print proofs for an offset press job or to simulate another print device, choose the appropriate CMYK Simulation print option setting and choose Solid Color as the Rendering Style print option setting (see “CMYK Simulation” on page 2-9).

Chapter 4: Printer Drivers and Print Options

This chapter describes the role of the printer driver in your workflow and explains how to use Macintosh and Windows printer drivers for RIP Station printing. It includes the following topics:

- An explanation of what a PostScript Level 2 or 3 printer driver does
- Information on the capabilities of various printer drivers
- Instructions for setting color options with the Adobe PostScript printer drivers for Macintosh, Windows 95, and Windows 3.1x
- Instructions for setting RIP Station print options with the Microsoft PostScript Level 2 printer driver for Windows NT 4.0

What a printer driver does

To take full advantage of the features of the RIP Station, your print jobs must be sent as PostScript Level 2 (or higher) files. Most applications cannot create this PostScript data directly. It is the function of a printer driver to interpret the instructions generated by the application and convert them into PostScript data.

A PostScript Level 2 or 3 printer driver also allows you to select print options specific to your print device. To do this, the printer driver must be matched with a PostScript **printer description file (PPD)** for your RIP Station. The PPD contains information about the particular features supported by the RIP Station and the print device. When you print a job, the printer driver lets you choose among features by specifying print options.

A few PostScript applications (for example, PageMaker 6.5) can send PostScript Level 2 data directly to the print device and present print options within the application interface. Even these applications, however, require that you use a PostScript Level 2 or greater printer driver.

Your RIP Station user software includes Adobe printer drivers for Macintosh, Windows 95, and Windows 3.1x computers. These are the recommended printer drivers for printing to the RIP Station.

- For Windows NT 4.0 computers, you can use the Microsoft PostScript Level 2 printer driver included with Windows NT 4.0.
- For Windows NT 3.51, there is no PostScript Level 2 printer driver available. You can print from Windows NT 3.51 using the Microsoft PostScript Level 1 printer driver, but the driver does not let you specify print options. You can use only the RIP Station default settings when you print from Windows NT 3.51.

Adobe PostScript Printer Driver for Macintosh

This section explains how to set color management print options with the AdobePS 8.5.1 printer driver for Macintosh. AdobePS is a PostScript 3 driver that can take full advantage of the color features of the RIP Station, and lets you save a set of print option settings that you use often.

Before you proceed, make sure you have completed the following procedures:

- Install the AdobePS printer driver and the RIP Station PPD as described in the *Setup Guide*.
- Select the RIP Station in the Chooser and match it with the RIP Station PPD.

NOTE: The following illustrations and instructions do not apply to all applications. Some applications, such as PageMaker 6.5, handle color management settings independently of the printer driver. For information on specific applications, see the application notes.

Setting color management print options

You choose print options from the various panes of the AdobePS driver dialog box.

NOTE: The word "pane" is used to describe the different "pages" that appear in the driver's dialog box when you make selections from pull-down menus in the dialog box. Each pane presents a particular set of print options.

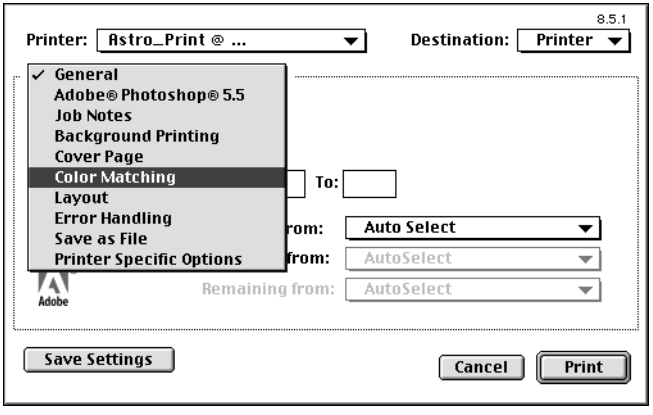
To access the initial AdobePS dialog box, choose Print from your application's File menu.

The AdobePS driver offers you the following three Color Matching options.

- PostScript Color Matching—This option is intended for use with PostScript Level 2 (or higher) printers such as the RIP Station. It provides for color conversion *on the RIP Station* using a color rendering dictionary resident on the printer (i.e., a RIP Station CRD) or a color rendering dictionary that is downloaded with the print job. Typically you should use this option for printing to the RIP Station.
- ColorSync Color Matching—This option provides for color conversion *on the computer* using a color rendering dictionary generated by ColorSync from an ICC profile. This option can be used with PostScript Level 2 printers such as the RIP Station, but is intended for use with PostScript Level 1 printers, or in cases where the computer's processing capability exceeds that of the printer, or for use with customized ICC profiles. If you use this option, be sure to specify your custom ICC profile or the RIP Station ICC profile as the Printer Profile.
- Color/Grayscale—This option maps color data to grayscale shades for monochrome printers and provides a generic color conversion for color print devices.

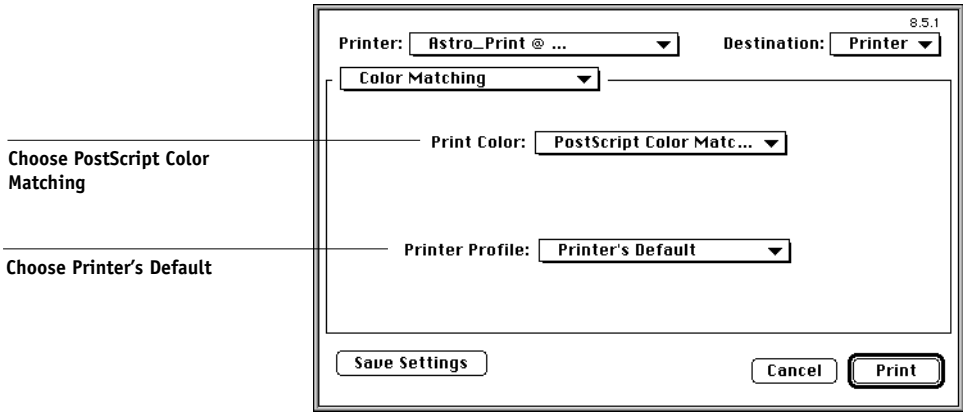
Setting RIP Station color management options

In the AdobePS Print dialog box, choose Color Matching from the pull-down menu.

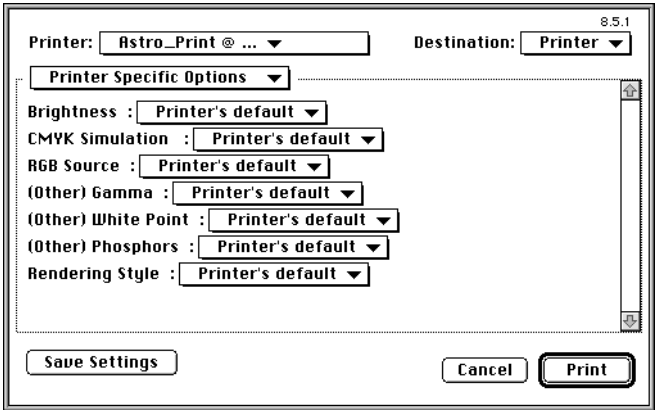


In the Color Matching pane, choose PostScript Color Matching as the Print Color setting and choose Printer's Default as the Printer Profile setting.

NOTE: The Printer Profile setting must be Printer's Default. If you choose a named printer profile from this menu, it overrides any Rendering Style setting you choose.



In the Printer Specific Options pane, choose settings for the print options described in Chapter 2.



If these settings are ones you use regularly, click Save Settings to preserve them for subsequent jobs.

The AdobePS driver writes a PostScript file containing the instructions generated by your application and the RIP Station print options you selected. The driver sends the PostScript file to the RIP Station. The RIP Station performs PostScript processing and color conversions according to the settings you chose and sends rasterized color data to the print device.

Adobe PostScript Printer Driver for Windows 95

This section explains how to set RIP Station color print options with the Adobe PostScript Printer Driver version 4.2.x for Windows 95.

Before you proceed, make sure you have completed the following procedures described in the *Setup Guide*:

- Install the Adobe PostScript Printer Driver version 4.2.x and RIP Station PPD.
- Set up the RIP Station for printing.

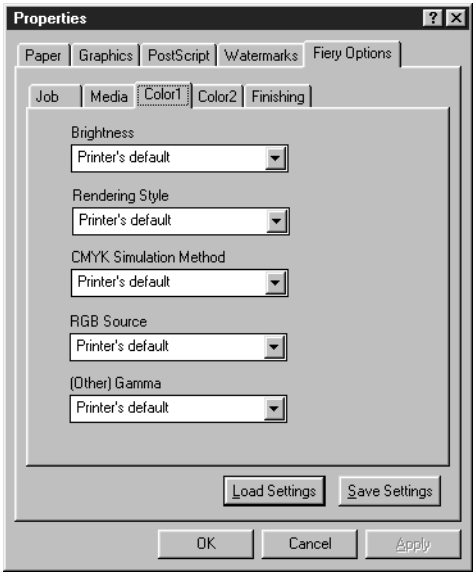
Setting color management print options

The printer driver options described in this section can be set from the Windows Control Panel or from the Print Setup or Page Setup dialog boxes of most applications. It is recommended that you set these options initially from the Windows Control Panel as described in this section. This provides you with a default configuration that is appropriate for most RIP Station print jobs. You can choose different settings for individual jobs from the applications you use.

To set default print options, open the Printers Control Panel, right-click the RIP Station, and select Properties. For more information on how to access the dialog boxes shown in this section, see the *User Guide*.

NOTE: The following illustrations and instructions do not apply to all applications. Some applications, such as PageMaker 6.5, handle color management settings independently of the printer driver. For information on specific applications, see the application notes.

In the Fiery Options tab (or the Device Options tab), choose settings for the print options described in Chapter 2.



The printer driver writes a PostScript file containing the instructions generated by your application and the RIP Station print options you selected. The driver sends the PostScript file to the RIP Station. The RIP Station performs PostScript processing and color conversions according to the settings you chose and sends raster color data to the print device.

Adobe PostScript Printer Driver for Windows 3.1x

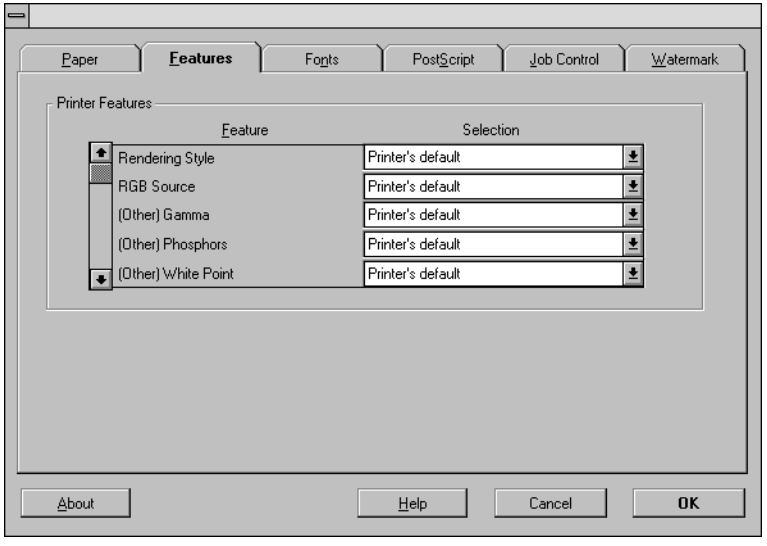
This section explains how to set RIP Station color print options with the Adobe PostScript Printer Driver version 3.01 for Windows 3.1x.

Before using the instructions in this section, make sure you have installed the printer driver and RIP Station PPD and set up the RIP Station for printing, as described in the *Setup Guide*.

Setting color management print options

The printer driver options described in this section can be set from the Windows Control Panel or from the Print Setup or Page Setup dialog boxes of most applications. It is recommended that you set these options initially from the Windows Control Panel as described in this section. This provides you with a default configuration that is appropriate for most RIP Station print jobs. You can choose different settings for individual jobs from the applications you use.

To set default print options, open the Printers Control Panel and select the RIP Station in the Installed Printers box. For more information on how to access the dialog boxes shown in this section, see the *User Guide*.



In the Features tab, choose settings for the print options described in Chapter 2.

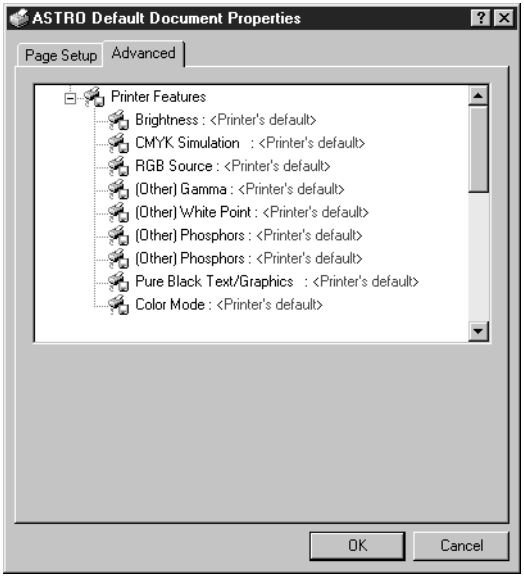
Microsoft PostScript Printer Driver for Windows NT 4.0

The printer driver options described in this section can be set from the Windows Control Panel or from the Print Setup or Page Setup dialog boxes of most applications. It is recommended that you set these options initially from the Windows Control Panel as described in this section. This provides you with a default configuration that is appropriate for most RIP Station print jobs. You can choose different settings for individual jobs from the applications you use.

To set default print options, open the Printers Control Panel, right-click the RIP Station, and select Document Defaults. For more information on how to access the dialog boxes shown in this section, see the *User Guide*.

NOTE: The following illustrations and instructions do not apply to all applications. Some applications, such as PageMaker 6.5, handle color management settings independently of the printer driver. For information on specific applications, see the application notes.

From the Advanced tab of the Document Properties dialog box, choose settings for the print options described in Chapter 2.



Chapter 5: Adobe Photoshop 4.0

This chapter covers features of Photoshop version 4.0 for Macintosh and Windows. The illustrations show only Macintosh dialog boxes, but the information and instructions apply equally to the Windows version of Photoshop. Most of the information presented in this chapter also applies to previous versions of Photoshop.

Before you begin

A special feature of Photoshop allows you to save RGB EPS (PostScript) images that include independent source color space information. This feature is sometimes referred to as "PostScript Level 2 tagging" or "RGB tagging."

You define the source color space to apply to RGB EPS images by specifying a Monitor Setup in Photoshop. This Photoshop-specific source color space definition is overridden by the RGB Source print option setting unless you set RGB Source to Off (see page 2-7).

If you are using a Windows version of Photoshop or Photoshop 2.5 for Macintosh, use the instructions below to ensure proper functioning of the RGB tagging feature.

With Windows versions of Photoshop

If you use any Windows version of Photoshop, you must edit the Photoshop configuration settings file in order to enable PostScript Level 2 tagging for RGB EPS files.

In the Photoshop\Prefs folder, open the Photos40.ini (Photoshop 4.0) or Photos30.ini (Photoshop 3.0) file and append the following line to it:

DISABLERGBTAGS=1

Save the file; the change takes effect the next time you start Photoshop.

With Photoshop 2.5 for Macintosh

If you use Photoshop version 2.5 for Macintosh, make sure the plug-in called "Don't Tag RGB PostScript®" is *not* placed in the Photoshop Plug-ins folder. Otherwise PostScript Level 2 tagging does not occur for RGB EPS files.

If you remove the plug-in, the change takes effect the next time you start Photoshop.

Defining colors

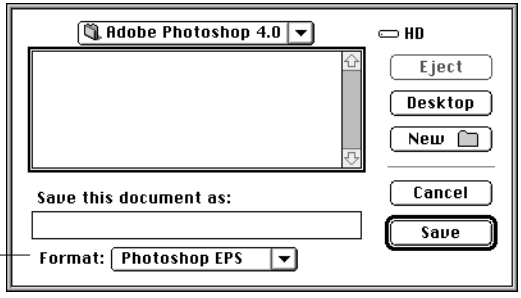
You can choose colors in Photoshop with various color models including HSB, Lab, RGB, and CMYK. For best results, use the color definition methods described in Chapter 3.

Saving files for importing into other documents

Before saving an RGB EPS file, check the Photoshop Monitor Setup. This setting defines the RGB source color space information that will be included in the RGB EPS image (see page 5-1). You can override this source color space with the RGB Source setting (see page 2-7).

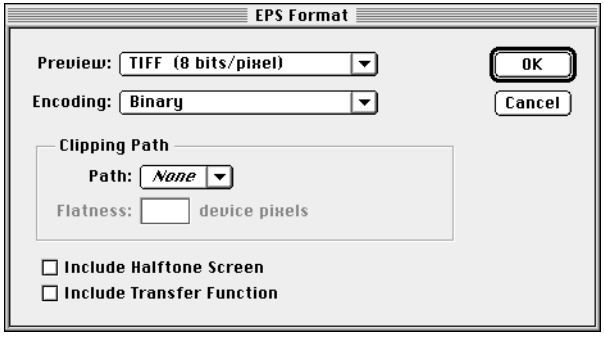
Before saving any file, perform any rotating, cropping, and resizing needed. This speeds processing when printing from the application in which the image is placed.

It is recommended that you use the EPS or TIFF file formats to save RGB images that will be imported into other documents and printed to the RIP Station. EPS and TIFF files can be imported into virtually all page layout applications.



Choose Photoshop EPS or TIFF

In the EPS Format dialog box, choose binary encoding and do *not* include transfer functions or halftone screens. A TIFF preview is compatible with both Macintosh and Windows computers.



If you experience problems printing the document in which you place the image, substitute an ASCII-encoded version of the same image, and print the document again. Binary encoding is much more compact than ASCII encoding, but occasionally causes printing problems with some system configurations.

NOTE: If you choose to try JPEG encoding, keep a backup of the original image saved with binary encoding until you have seen the printed results of the JPEG-encoded file. The compression used for JPEG encoding may produce unwanted artifacts in the file. If you see unexpected results in the printed output of a JPEG-encoded file, use a binary-encoded version instead.

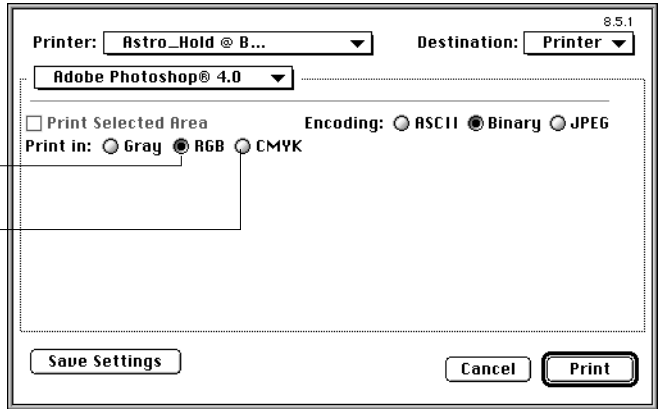
Selecting options when printing

You can print RGB or CMYK images from Photoshop.

- When you print RGB images, you can choose whether a color conversion is performed by the RIP Station using a CRD or by Photoshop using Photoshop's separation settings.
- When you print CMYK images, you can print composites or **color separation**s.

Printing RGB images

Use the following instructions to print RGB images.



Click to print using a RIP Station CRD

Click to print using Photoshop's separation settings

Choose whether to print in RGB or CMYK. (With the AdobePS 8.5.1 printer driver for Macintosh, these options appear in the Adobe Photoshop pane of the Print dialog box.)

If you select "Print in RGB," Photoshop sends RGB data to the RIP Station and a CRD is used to perform color conversion. Choose the appropriate print option settings for RGB data (see Chapter 2 and Chapter 4).

If you select "Print in CMYK," Photoshop performs a color conversion and sends CMYK data to the RIP Station.

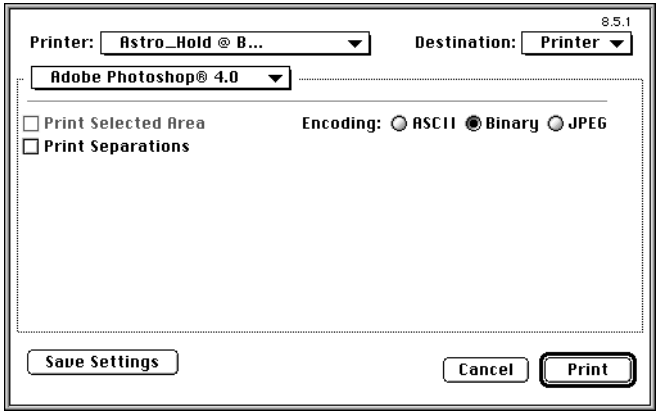
- If Photoshop is configured for separating to an offset press standard, apply the corresponding CMYK Simulation setting. For example, if Photoshop is configured for separating to SWOP, choose SWOP-Coated as the CMYK setting. If you apply a CMYK Simulation setting (other than None) to the job, choose Solid Color for the Rendering Style setting (see page 2-9).
- If Photoshop is configured for a custom separation (not a press standard), choose None as the CMYK Simulation setting.

For fastest print times, select JPEG encoding. You should, however, check the printed output carefully for unwanted artifacts that can appear as a result of JPEG compression. If you see unexpected results in the printed output when printing with JPEG encoding, print the job again using Binary encoding.

Choose any other print options you want to use (see Chapter 4).

Printing CMYK images

Use the following instructions to print CMYK images.



Choose an encoding method. (With the AdobePS 8.5.1 printer driver for Macintosh, these options appear in the Adobe Photoshop pane of the Print dialog box.) For fastest print times, select JPEG encoding. You should, however, check the printed output carefully for unwanted artifacts that can appear as a result of JPEG compression. If you see unexpected results in the printed output when printing with JPEG encoding, print the job again using Binary encoding.

Choose any other print options you want to use (see Chapter 4).

- If the image was separated for an offset press standard, apply the corresponding CMYK Simulation setting. For example, if the image is separated for SWOP, choose SWOP-Coated as the CMYK Simulation setting. If you apply a CMYK Simulation setting (other than None) to the job, choose Solid Color for the Rendering Style setting (see page 2-9).
- If the image was separated using a custom separation (not a press standard), choose None as the CMYK Simulation setting.

Chapter 6: Page Layout Applications

This chapter provides instructions for printing color documents from Adobe PageMaker 6.5 and QuarkXPress 3.32.

Before printing from these applications, make sure the appropriate printer driver and the RIP Station PPD are installed on your computer as described in the *Setup Guide*.

Working with page layout applications

The following sections apply to all page layout applications.

Defining colors

Page layout applications generally use the CMYK color model. Some allow you to define colors with other color models and may be able to send that data to the RIP Station in those other color models. For predictable results with CMYK colors, use the CMYK Color Reference pages when defining colors in page layout applications. See "Choosing colors in PostScript applications" on page 3-4.

Importing images

EPS and TIFF are the recommended formats for images imported into page layout documents. Support for importing other file formats may be provided by individual applications.

All RGB images placed in your document are affected by the RGB Source and Rendering Style settings. The RIP Station color management system applies the specified RGB Source setting to all RGB data and then uses the specified Rendering Style (CRD) to perform a color conversion. An exception to this occurs if you assign ICC profiles to RGB images using the application's color management tools (see "Tips for advanced users"). In this case, the application performs the color conversion of the image and sends CMYK data to the RIP Station.

If you apply any CMYK Simulation setting other than None to the job, CMYK data is also affected by the specified Rendering Style setting.

Tips for advanced users

If you place multiple RGB images, some non-photographic and some photographic, a single CRD may not be suitable for all the images. In this case you may want the photographic images to bypass the CRD altogether. To accomplish this, separate the image to CMYK data with a pixel-editing application such as Photoshop and perform color correction on it. Then save it as an EPS or TIFF file and import it into the document. When specifying print option settings, set the CMYK Simulation option to None so that the Rendering Style setting will not be applied to CMYK data (see "CMYK Simulation" on page 2-9).

Alternatively, you can save the RGB image in TIFF format and assign it an ICC profile and rendering intent when you import it into the document, if your application supports this feature.

CMYK simulation

You can specify a press simulation target for the job with a print option (see page 2-9*).* The CMYK Simulation setting affects all CMYK color data sent by the page layout application.

- If the document contains CMYK images that were separated for an offset press standard, apply the corresponding CMYK Simulation setting. For example, for images separated for SWOP, choose SWOP-Coated as the CMYK Simulation setting. If you apply a CMYK Simulation setting (other than None) to the job, choose Solid Color for the Rendering Style setting (see page 2-9).
- If the document contains CMYK images that were separated for a custom separation (not a press standard), choose None as the CMYK Simulation setting.

Adobe PageMaker 6.5 for Macintosh and Windows

The Windows and Macintosh versions of PageMaker 6.5 are essentially identical. The illustrations in this section show only the Windows version, with the exception of instances where differences exist between the two versions.

PostScript Level 2 interface

PostScript Level 2 features, including color management, are incorporated into the PageMaker 6.5 application interface. When you print from PageMaker 6.5, you specify print options and color settings using PageMaker print dialog boxes, not the printer driver dialog boxes described in Chapter 4. However, you must use a PostScript Level 2 (or higher) printer driver to access RIP Station print options when printing from PageMaker.

Windows version requirement

For the Windows version of PageMaker 6.5, make sure a copy of the RIP Station PPD file is in both of the following folders:

- PM65\RSRC\USENGLSH\PPD4
- Windows\System

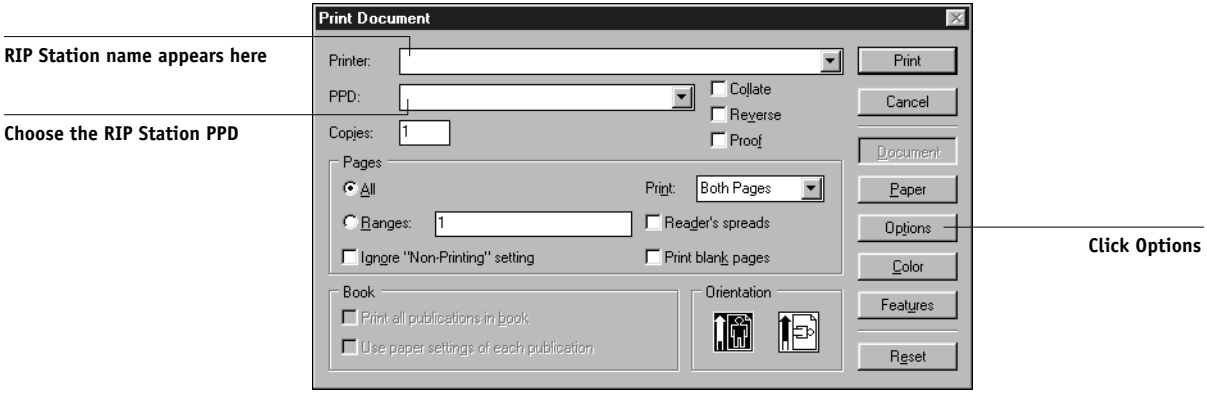
Importing images

All RGB images placed in your document are affected by your RGB Source and Rendering Style settings. For best results with placed images, use the instructions in “Importing images” on page 6-1 and “CMYK simulation” on page 6-2.

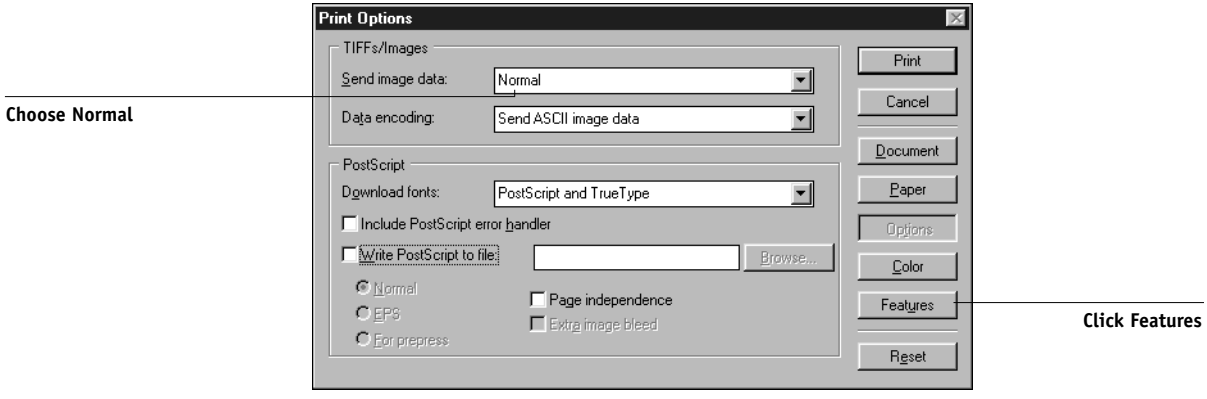
Advanced users can use PageMaker’s color management tools for added flexibility with placed RGB images (see “Assigning ICC profiles to RGB images” on page 6-5).

Selecting options when printing

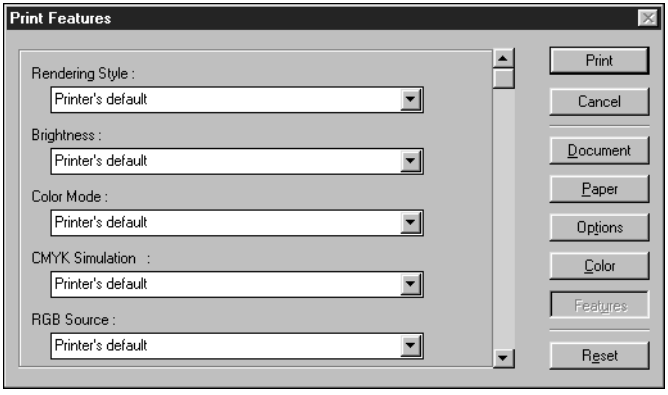
All print settings are specified from the various Print dialog boxes in PageMaker 6.5. The printer driver interface described in Chapter 4 is not used.



In the Print Document dialog box, select the RIP Station PPD from the PPD menu.



In the Print Options dialog box, choose Normal (not the Optimized Subsampling default) from the Send image data menu. This setting ensures that TIFF images print at their full resolution.



If your document contains RGB placed images or colors defined in RGB that will not be separated to process colors, choose RGB Source and Rendering Style settings in the Print Features dialog box. Choose any other RIP Station print options you wish.

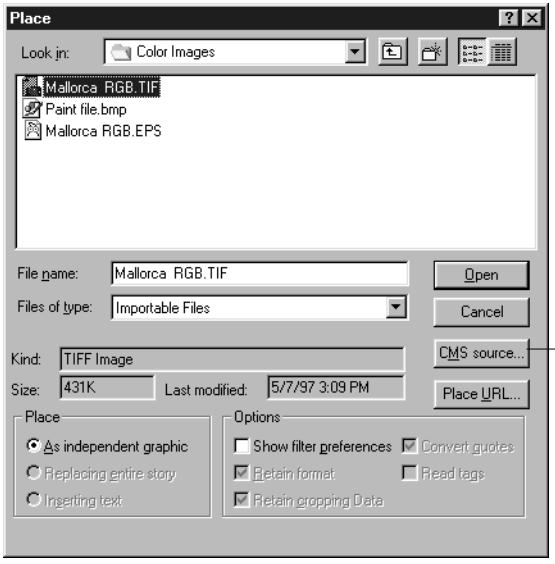
When you click Print from any of the PageMaker 6.5 dialog boxes the job is sent to the RIP Station. You do not see the printer driver dialog boxes described in Chapter 4.

Assigning ICC profiles to RGB images

When you place a non-EPS RGB image (such as a TIFF, JPEG, or GIF image), you can specify an ICC target profile and a rendering intent for the image. You can assign a unique rendering intent to each image you import.

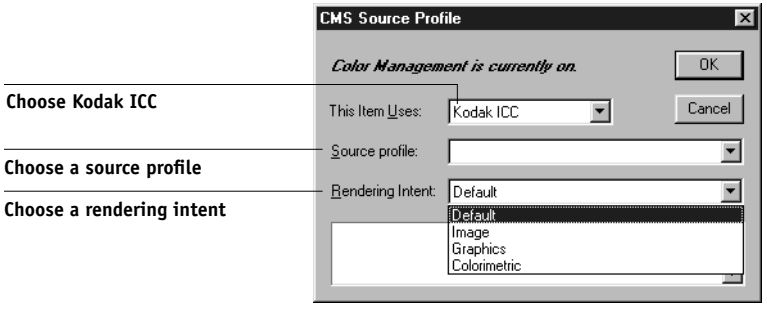
When you use this feature, PageMaker controls the color conversion of the RGB images (using the specified ICC profiles) and sends CMYK data to the RIP Station. The CMYK data produced by these conversions is not separated for offset press standards; therefore you should set the CMYK Simulation print option to None (see “CMYK Simulation” on page 2-9). The RGB Source and Rendering Style settings have no effect on these images (unless you specify a CMYK Simulation setting other than None).

After selecting an image to import with the Place command, the CMS Source button becomes active in the Place dialog box.

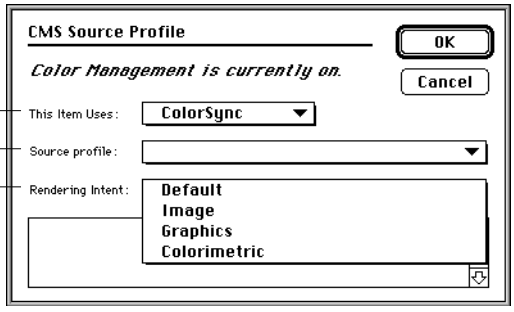


Click CMS Source and choose settings in the CMS Source Profile dialog box.

Windows



Macintosh



With the Macintosh version of PageMaker, choose ColorSync from the This Item Uses menu; with the Windows version, choose Kodak ICC.

The rendering intents correspond to RIP Station CRDs as follows:

- **Default**—uses the profile's rendering intent
- **Image**—similar to the Photographic CRD
- **Graphics**—similar to the Presentation CRD
- **Colorimetric**—similar to the Solid Color CRD

This dialog box can also be accessed by selecting the image and choosing Image > CMS Source from the Element menu.

QuarkXPress 3.32 for Macintosh and Windows

Before starting QuarkXPress, make sure the EfiColor XTension is *not* loaded in the XTensions folder. EFICOLOR profiles are not currently provided with RIP Station products. Without the correct EFICOLOR profile, the EfiColor XTension does not perform color conversions on placed images.

Windows version requirement

For the Windows version of QuarkXPress, make sure a copy of the RIP Station PPD file is in the \XPRESS\PDF folder.

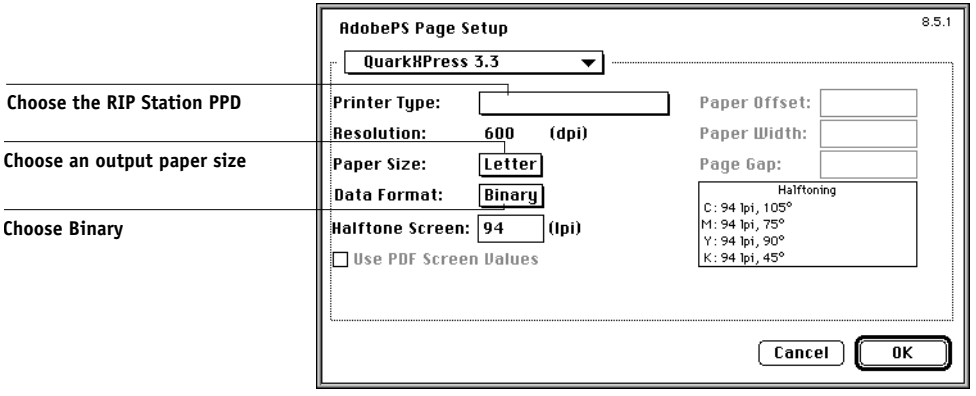
Importing images

All RGB images placed in your document are affected by your RGB Source and Rendering Style settings. For best results with placed images, use the instructions in "Importing images" on page 6-1 and "CMYK simulation" on page 6-2.

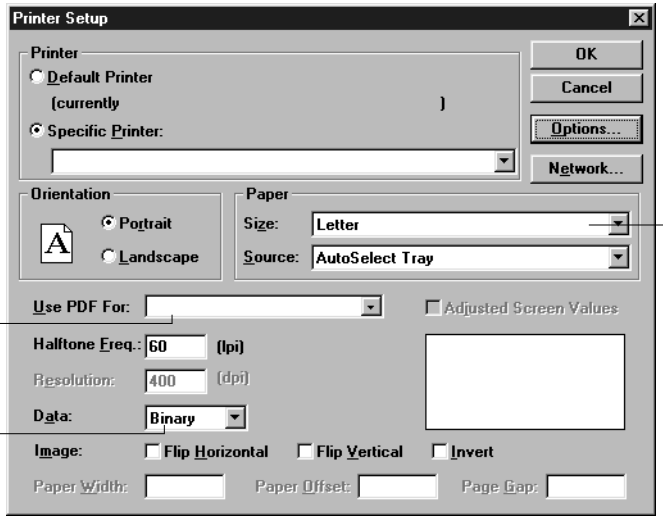
Selecting options when printing

You must select the RIP Station PPD from the Printer Type menu in the Page Setup (Macintosh) or Printer Setup (Windows) dialog box.

Macintosh



Windows



If your document contains RGB placed images or colors defined in RGB that will not be separated to process colors, choose RGB Source and Rendering Style settings. Choose any other RIP Station print options you wish.

For instructions on setting print options, see Chapter 4.

Chapter 7: Illustration Applications

This chapter provides instructions for using Illustrator 7.0 for Macintosh and Windows, FreeHand 7.0 for Macintosh and Windows, and CorelDRAW 7.0 for Windows.

Before printing from these applications, make sure the appropriate PostScript printer driver and the RIP Station PPD are installed on your computer as described in the *Setup Guide*.

Working with illustration applications

You can print directly from an illustration application or use it to create and save files that will be imported into a page layout document. To print from an illustration application, use the printer driver and the print settings recommended in Chapter 4.

These application notes provide instructions for printing composites only. For instructions on printing color separations, refer to the documentation for your application.

As a general rule, use the **EPS** file format when saving files with an illustration application.

Defining colors

All illustration applications use the CMYK color model. While some also allow you to define colors using other color models, they all send CMYK data to the RIP Station. For predictable results with CMYK colors, use the CMYK Color Reference pages when defining colors (see "Choosing colors in PostScript applications" on page 3-4).

Importing images

In general, all images placed into illustration application documents should be in EPS format.

All RGB images placed in your document are affected by the RGB Source and Rendering Style settings. The RIP Station color management system applies the specified RGB Source setting to all RGB data and then uses the specified Rendering Style (CRD) to perform a color conversion. An exception to this occurs if you assign ICC profiles to RGB images using the application's color management tools (see "Tips for advanced users"). In this case, the application performs the color conversion of the image and sends CMYK data to the RIP Station.

If you apply any CMYK Simulation setting other than None to the job, CMYK data is also affected by the specified Rendering Style setting (see "RIP Station color management" on page 2-5).

Tips for advanced users

If you place multiple RGB images, some non-photographic and some photographic, a single CRD may not be suitable for all the images. In this case you may want the photographic images to bypass the CRD altogether. To accomplish this, separate the image to CMYK data with a pixel-editing application such as Photoshop and perform color correction on it. Then save it as an EPS or TIFF file and import it into the document. When specifying print option settings, set the CMYK Simulation option to None so that the Rendering Style setting will not be applied to CMYK data (see "CMYK Simulation" on page 2-9).

Alternatively, you can save the RGB image in TIFF format and assign it an ICC profile and rendering intent when you import it into the document (see the individual application notes in this chapter).

CMYK simulation

You can specify a press simulation target for the job with a print option (see page 2-9*).* The CMYK Simulation setting affects all CMYK color data sent by the illustration application.

- If the document contains CMYK images that were separated for an offset press standard, apply the corresponding CMYK Simulation setting. For example, for images separated for SWOP, choose SWOP-Coated as the CMYK Simulation setting. If you apply a CMYK Simulation setting (other than None) to the job, choose Solid Color for the Rendering Style setting (see page 2-9).
- If the document contains CMYK images that were separated for a custom separation (not a press standard), choose None as the CMYK Simulation setting.

Adobe Illustrator 7.0 for Macintosh and Windows

The Windows and Macintosh versions of Illustrator 7.0 are essentially identical. The illustrations in this section show only the Windows version, with the exception of instances where differences exist between the two versions.

Defining colors

Any colors defined in Illustrator are sent to the printer in CMYK—even those defined using other color models. For best results, use the color definition methods described on “Choosing colors in PostScript applications” on page 3-4.

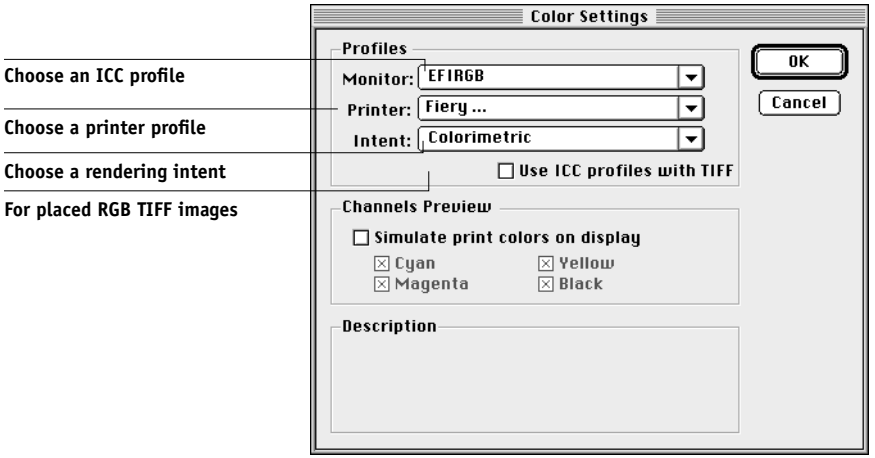
Color Settings

You can control the conversion of RGB colors defined in Illustrator by specifying settings in the Color Settings dialog box.

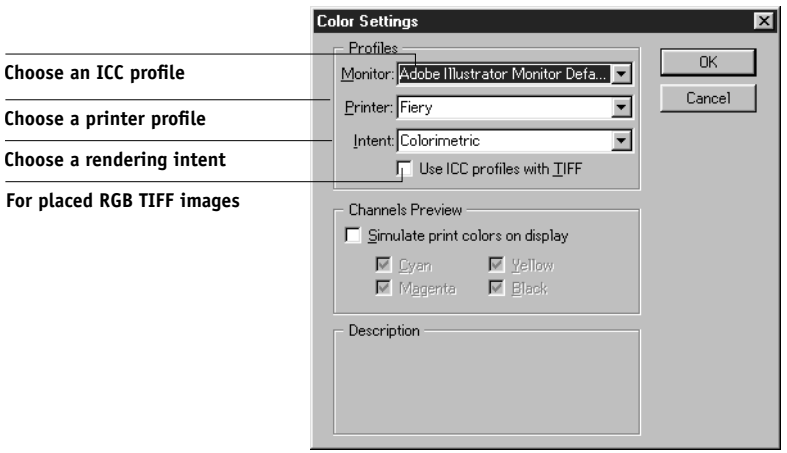
With Macintosh computers, you can specify the EFIRGB ICC profile as the Monitor profile. This defines the same source color space for RGB data defined in Illustrator as is defined by the RIP Station RGB Source setting of EFIRGB (see Chapter 2).

If the "Use ICC profiles with TIFF" option is checked, you can specify an ICC profile and a rendering intent for each RGB TIFF image you place in the document (see "For advanced users: Using Illustrator color management" on page 7-7).

Macintosh



Windows



Importing images

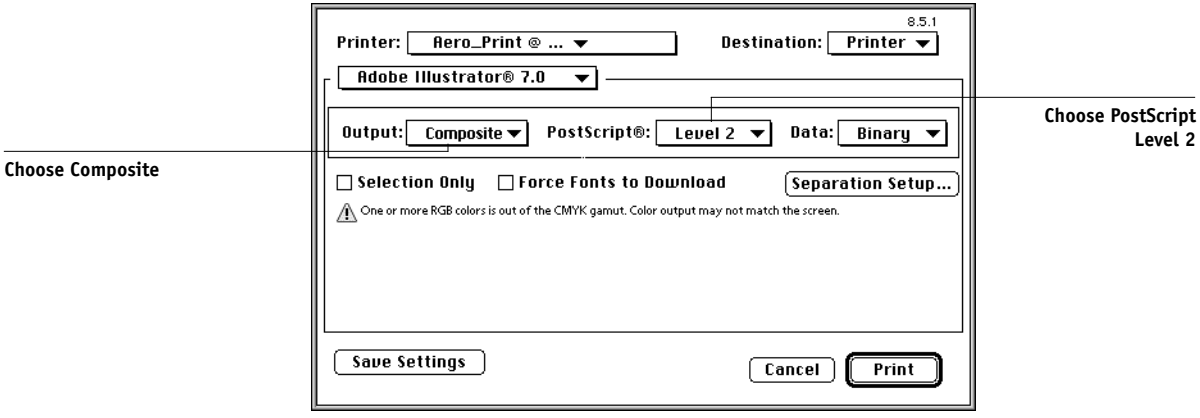
All RGB images placed in your document are affected by your RGB Source and Rendering Style settings. For best results with placed images, use the instructions in "Importing images" on page 7-2 and "CMYK simulation" on page 7-3.

Advanced users can use Illustrator's color management tools for added flexibility with placed RGB images (see page 7-2 and page 7-7).

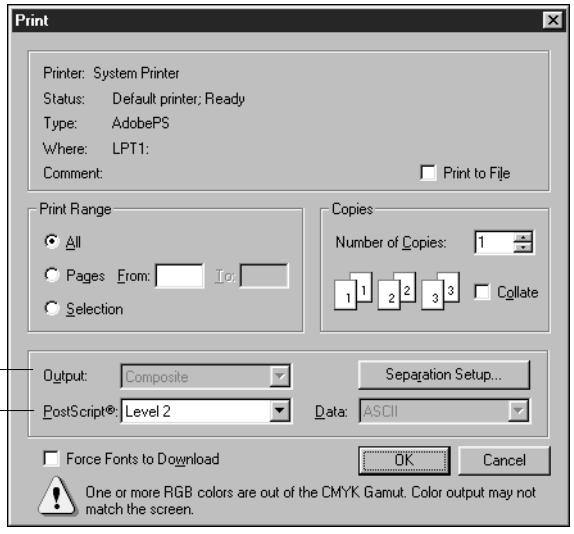
Selecting options when printing

Choose Composite output and PostScript Level 2.

Macintosh



Windows



Choose Composite

Choose PostScript Level 2

If your document contains placed RGB images, choose RGB Source and Rendering Style settings. With the exception of placed RGB images, these settings have no effect on colors printed with Illustrator 7.0 (unless you specify a CMYK Simulation setting other than None).

The PostScript Color Matching setting (made from the Macintosh printer driver) has no effect on colors printed from Illustrator 7.0. The effect of CRDs on placed RGB images is independent of this setting.

For instructions on setting print options, see Chapter 4.

Saving files for importing into other documents

When saving files in Illustrator 7.0 for importing into other types of documents, use the EPS file format.

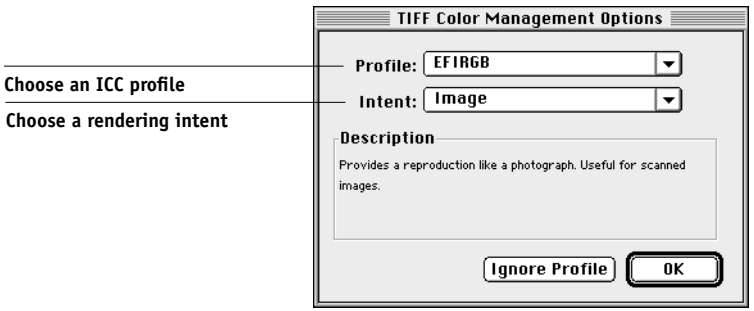
Illustrator saves all color information in CMYK, so RGB Source and Rendering Style settings have no effect on color output of artwork saved with Illustrator and imported into other kinds of documents. (An exception occurs if you apply a CMYK Simulation setting other than None to the CMYK data; see “RIP Station color management” on

page 2-5.) In the case of Illustrator files imported into Photoshop, however, vector data from the Illustrator file is rasterized into bitmaps in Photoshop, and the final color space of the bitmap data is determined by the color mode you set in Photoshop.

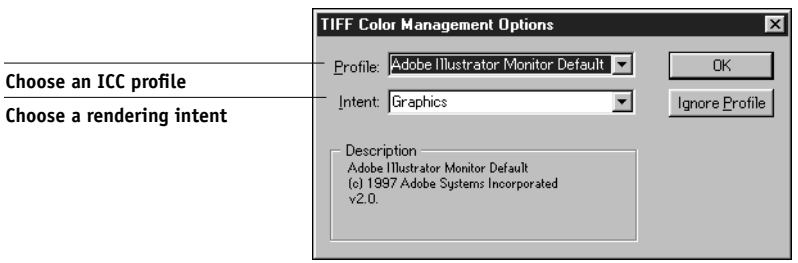
For advanced users: Using Illustrator color management

When you place an RGB TIFF image, you can specify an ICC profile and a rendering intent for the image. You can assign a unique rendering intent to each image you import. To use this feature, make sure the "Use ICC profiles with TIFF" option is checked in the Color Settings dialog box (see page 7-3).

Macintosh



Windows



The rendering intents correspond to RIP Station CRDs as follows:

- **Default**—uses the profile's rendering intent.
- **Image**—similar to the Photographic CRD
- **Graphics**—similar to the Presentation CRD
- **Colorimetric**—similar to the Solid Color CRD

For more information on Illustrator's color management features, see your Illustrator documentation.

Macromedia FreeHand 7.0 for Macintosh and Windows

The information in this section applies to both the Macintosh and Windows versions of FreeHand 7.0. Only Macintosh-version dialog boxes are shown, but the information and instructions are identical for the Windows version of FreeHand.

Defining colors

Any colors defined in FreeHand are sent to the printer in CMYK—even those defined using other color models. For best results, use the color definition methods described on "Choosing colors in PostScript applications" on page 3-4.

You can control the conversion of RGB colors defined in FreeHand by specifying settings in the Color Management Preferences dialog box (see page 7-11).

Importing images

A number of file types can be imported into FreeHand 7.0 but, once imported, all are treated as either an EPS image, a TIFF image, or editable paths. For details, see your FreeHand documentation.

When you place an EPS image into a FreeHand document, the image is imported as a unit, with a reference link to the original file; the contents of the image are not affected. If the image is a CMYK EPS file, the colors are printed just as from the application in which they were saved.

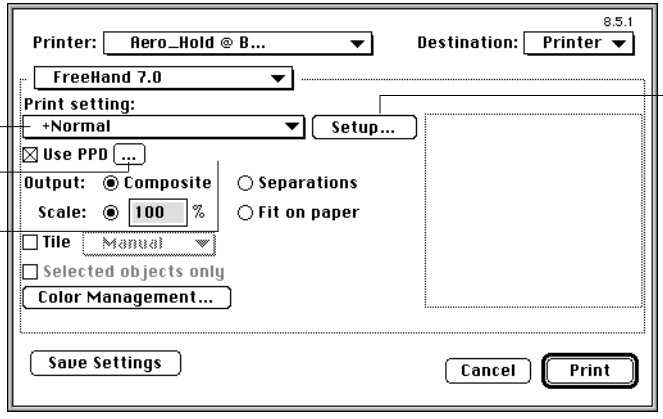
NOTE: Before placing a CMYK EPS file, be sure the file was saved with Desktop Color Separation (DCS) set to *off*. If the file was saved with DCS on, FreeHand prints composites of the image at the low resolution used for screen viewing.

All RGB images placed in your document are affected by your RGB Source and Rendering Style settings. For best results with placed images, use the instructions in "Importing images" on page 7-2 and "CMYK simulation" on page 7-3.

Advanced users can use FreeHand's color management tools for added flexibility with RGB images and colors (see page 7-2 and page 7-11).

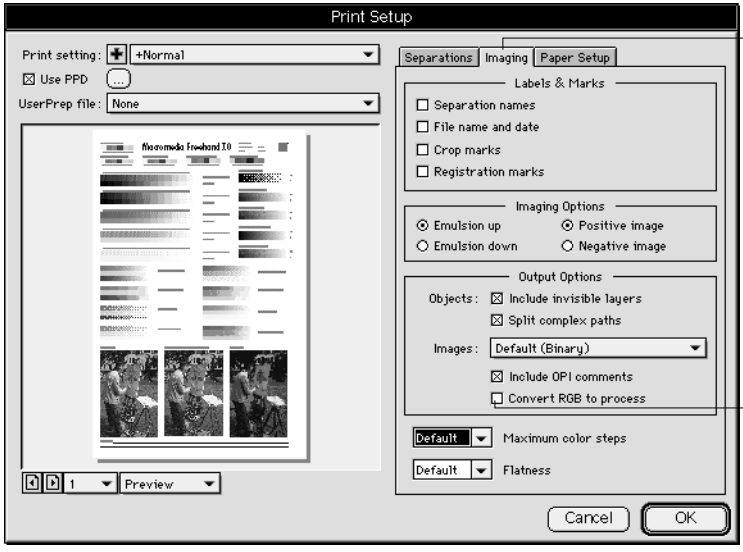
Selecting options when printing

Refer to the following illustrations to choose options when printing.



In the Print dialog box, make sure the Use PPD option is turned on. For Print setting, select Normal. If the Use PPD option is on, a plus sign (+) appears in front of the word "Normal". If the PPD name for your RIP Station is not displayed next to the PPD selection button, click the button marked "…" and select the appropriate PPD.

To use RIP Station color management features, turn off the "Convert RGB to process" checkbox in the Imaging tab of the FreeHand Print Setup dialog box. If this option is turned on, FreeHand's color management settings are used to convert RGB colors and images to CMYK (see page 7-11).



If your document contains placed RGB images, choose RGB Source and Rendering Style settings. With the exception of placed RGB images, these settings have no effect on colors printed with FreeHand (unless you specify a CMYK Simulation setting other than None).

Refer to your FreeHand documentation for information about other FreeHand print options.

Saving files for importing into other documents

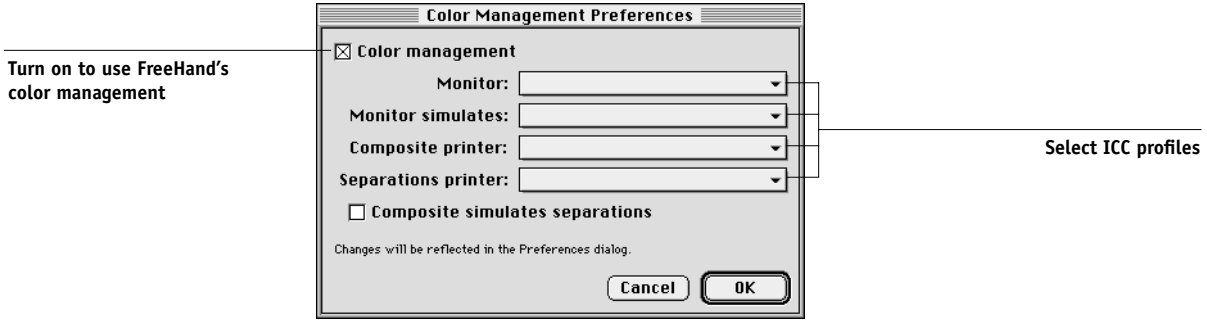
When saving files in FreeHand 7.0 for importing into other types of documents, use the EPS file format.

FreeHand saves all color information in CMYK, so RGB Source and Rendering Style settings have no effect on color output of artwork saved with FreeHand and imported into other kinds of documents. An exception occurs if you apply a CMYK Simulation

setting other than None; see “RIP Station color management” on page 2-5. In the case of FreeHand files imported into Photoshop, however, vector data from the FreeHand file is rasterized into bitmaps in Photoshop, and the final color space of the bitmap data is determined by the color mode you set in Photoshop.

For advanced users: Using FreeHand color management

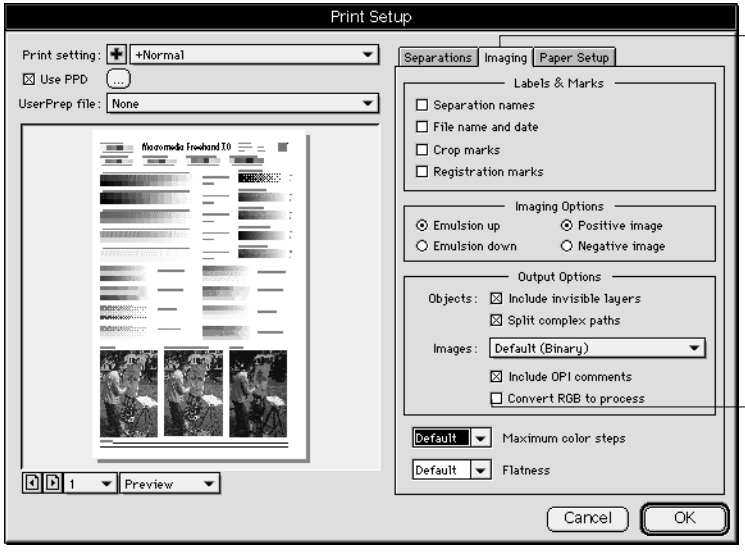
For colors defined in RGB and RGB images, you can activate FreeHand color management and make selections in the Color Management Preferences dialog box.



Turn on the Color management checkbox and choose ICC profiles from the four menus. Refer to your FreeHand 7.0 documentation for instructions on setting the options in this dialog box. These settings affect only RGB images and colors defined in RGB—they have no effect on RGB EPS images.

With Macintosh computers, you can specify the EFIRGB ICC profile as the Monitor profile. This defines the same source color space for RGB data defined in FreeHand as is defined by the RIP Station RGB Source setting of EFIRGB (see Chapter 2).

In the Imaging property sheet of the FreeHand Print Setup dialog box, turn on the "Convert RGB to process" option. This setting has no effect on RGB EPS images.



For more information on FreeHand's color management features, see your FreeHand documentation.

CorelDRAW 7.0 for Windows

Defining colors

Any colors defined in CorelDRAW are sent to the printer in CMYK—even those defined using other color models. For best results, use the color definition methods described in "Choosing colors in PostScript applications" on page 3-4.

You can control the conversion of RGB colors defined in CorelDRAW by specifying settings with the Color Manager (see page 7-14).

Importing images

All RGB images placed in your document are affected by your RGB Source and Rendering Style settings. For best results with placed images, use the instructions in "Importing images" on page 7-2 and "CMYK simulation" on page 7-3.

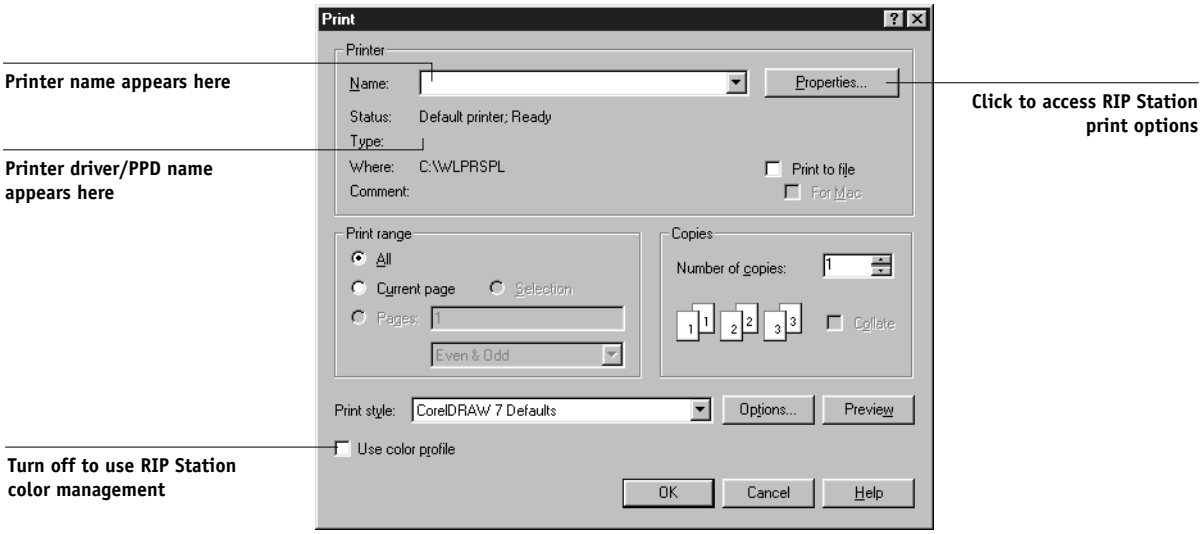
Advanced users can use CorelDRAW's color management tools for added flexibility with placed RGB images (see page 7-2 and page 7-14).

Selecting options when printing

In the Print dialog box, make sure the correct printer and PPD are selected.

To use RIP Station color management, make sure the "Use color profile" option is *not* turned on. If this option is turned on, CorelDRAW's color management settings are used to convert RGB colors and images to CMYK (see page 7-14).

Click Properties to specify RIP Station print options.



If your document contains placed RGB images, choose RGB Source and Rendering Style settings. With the exception of placed RGB images, these settings have no effect on colors printed with CorelDRAW (unless you specify a CMYK Simulation setting other than None).

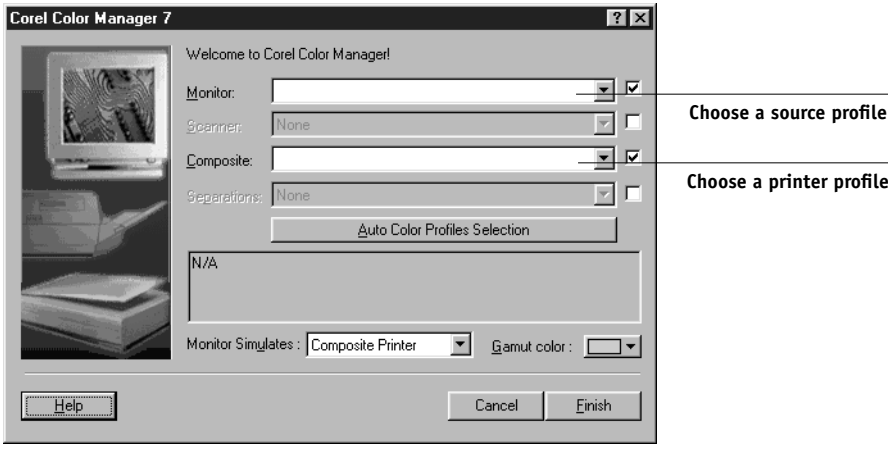
Saving files for importing into other documents

When saving files in CorelDRAW for importing into other types of documents, use the EPS file format.

CorelDRAW saves all color information in CMYK, so CRDs have no effect on color output of artwork saved with CorelDRAW and imported into other kinds of documents. In the case of CorelDRAW files imported into Photoshop, however, vector data from the CorelDRAW file is rasterized into bitmaps in Photoshop, and the final color space of the bitmap data is determined by the color mode you set in Photoshop.

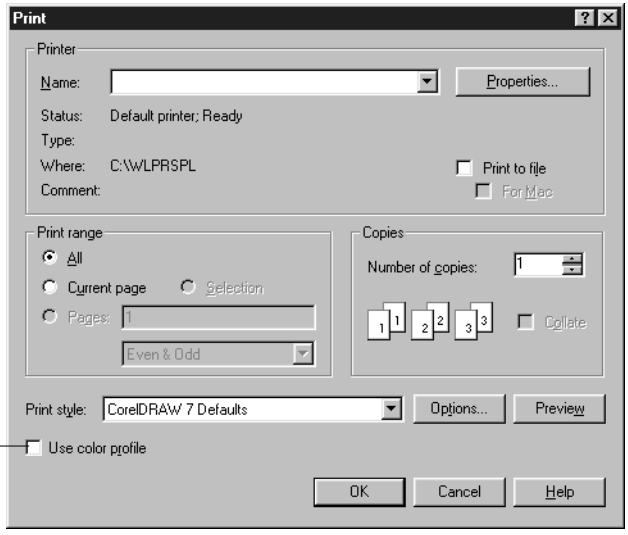
For advanced users: Using CorelDRAW color management

If the document contains RGB images or colors defined in RGB, you can use the CorelDRAW Color Manager to specify ICC profiles.



In the Color Manager dialog box, select ICC profiles from the four menus. Refer to your CorelDRAW 7.0 documentation for instructions on setting the options in this dialog box. These settings affect only RGB images and colors defined in RGB—they have no effect on RGB EPS images.

In the Print dialog box, turn on the "Use color profile" option. The printer profile you selected appears to the right of this checkbox.



Turn on to use CorelDRAW's color management

Chapter 8: Office Applications

This chapter provides instructions for printing color documents from QuickDraw and GDI applications such as presentation, spreadsheet, and word processing applications. You can use these instructions with the Microsoft Office 97 and Microsoft Office 95 suite of applications and Persuasion v3.0.

Working with office applications

Before printing from these applications, make sure the appropriate printer driver and the RIP Station PPD are installed on your computer as described in the *Startup Guide*. The RIP Station color management system provides complete color management for jobs printed from office applications.

Defining colors

Office applications use the RGB color model. For instructions on defining colors, see "Choosing colors in office applications" on page 3-3.

Working with imported files

Use EPS format files for all raster images you import into office applications. They print at their full resolution on the RIP Station (not at the low resolution used for the screen preview).

Although your application may allow you to import a variety of file formats, EPS format files are recommended for all raster images you want to import; some applications have printing problems when using file formats such as TIFF and PICT.

All RGB images placed in your document are affected by your RGB Source and Rendering Style settings.

Tip for advanced users

If you place multiple RGB images, some non-photographic and some photographic, a single CRD may not be suitable for all the images. In this case you may want the photographic images to bypass the CRD altogether. To accomplish this, separate the image to CMYK data with a pixel-editing application such as Photoshop and perform color correction on it. Then save it as an EPS file and import it into the document. When specifying print option settings, set the CMYK Simulation option to None so that the Rendering Style setting will not be applied to CMYK data (see "CMYK Simulation" on page 2-9).

Selecting options when printing

There are few differences between office applications with regard to RIP Station printing. The instructions in this chapter apply to all office applications. Use the instructions in Chapters 2 and 4 to specify print options and color management settings. To specify these options, you must use a PostScript Level 2 (or higher) printer driver, such as the Adobe PostScript Printer Driver.

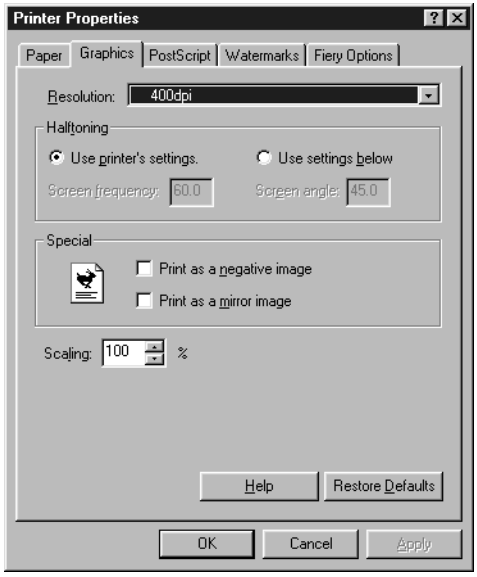
Because these applications send RGB data to the RIP Station, your choices of RGB Source and Rendering Style settings are important. Be sure to specify the appropriate CRD for the color effect you want (see "Rendering styles" on page 2-8).

Microsoft Office 97

Before printing from Microsoft Office 97, make sure the RIP Station ICM profile is *not* installed in the Windows\System\Color folder. If the ICM profile is installed, JPEG, BMP, and TIFF images print incorrectly from Microsoft Office 97.

Browse to the Windows\System\Color folder and locate the RIP Station ICM profile. If the icon is white, the profile is installed; if it is gray, it is not installed. If the profile is installed, select the profile and choose the right-mouse Uninstall command.

When the ICM file is *not* installed, color control options do *not* appear in the Graphics tab of the Printer Properties dialog box, as shown below.



Glossary

additive color model
A system in which colors are produced by combining red, green, and blue light (the additive primaries). An RGB video monitor is based on an additive color model.

additive primaries
Red, green, and blue light that is used in additive color systems. When added together in proper amounts, these colors of light produce white.

banding
Visible steps between shades in a color gradient.

bit depth
Amount of information used for each pixel in a raster image. Black and white images require only one bit per pixel. Grayscale images with 256 shades of gray require eight bits per pixel. Photographic quality color images can require 24 bits per pixel (RGB images) or 32 bits per pixel (CMYK images).

bitmap
An image comprised of small squares arranged in a grid. Each square in the grid is a pixel. The number of pixels per inch defines the resolution of a bitmap.

blasting
An undesirable effect that occurs when excess amounts of toner, combined with certain types of paper stock, cause an image to spread beyond its boundaries as defined in the file.

calibration
The process of ensuring that a device behaves consistently with respect to a set of specifications.

color gamut
See gamut.

color management system (CMS)
Software used to match color across different input, display, and output devices.

color rendering
A feature of color management software and PostScript Level 2 color printers that allows you to maintain the best possible translation of color from one color device to another. A color rendering dictionary (CRD) is used by the color management system or the printer's PostScript interpreter when converting data between color spaces. The RIP Station includes several CRDs, including Solid Color, Photographic, and Presentation, each of which provides a different color rendering style.

CRD (Color Rendering Dictionary)
See "color rendering"

color separation
The process of separating a color image into the primary color components for printing—cyan, magenta, yellow, and black. Also used to refer to the four sheets of film that result from the process of separating a color image.

color space
A model for representing color in terms of measurable values, such as the amount of red, green, and blue in an image. RGB and CMYK color spaces are based on color devices—monitors and printers respectively. Other color spaces, such as CIELAB are based on mathematical models and are device-independent. They are not based on the color response of a particular device.

colorant
An ink, die, toner, paint or other pigment that modifies the color of media to which it is applied.

composite printer
Any printer that can print directly in color without first creating color separations. A composite print can be used as an early proof of an offset print job.

continuous tone (contone)
A characteristic of printing in which dots (in some cases very elongated dots or lines) of different sizes are printed; can represent several intermediate gray tones between highlight and shadow.

continuous tone (contone) image
An image containing fine gradations of tones, such as a photographic image.

custom color system
A system of named color swatches that can be matched on press using process or spot colors. PANTONE and TruMatch are examples of custom color systems.

density
A precise measurement of the light energy transmitted or reflected by a surface in the presence of a standard light source.

DIC
A Japanese standard of specifications for separations, proofs, and color printing.

Encapsulated PostScript (EPS or EPSF)
A PostScript file format expressly designed to be embedded in another PostScript stream.

Euroscale
A European standard of specifications for separations, proofs, and color printing.

flexography
A printing technology that uses flexible raised-image plates. Flexography can be used to print on non-flat materials such as cans.

four-color printer
A printing device that uses cyan, magenta, yellow, and black ink or toner.

gamma
A numeric value representing the plotted relationship (gamma curve) between the input and output values of a color monitor. If gamma equals 1, input values are mapped exactly to output values. Most devices have a gamma curve greater than 1.

gamut
A range of colors. A device gamut is the range of colors that a device, such as a printer, can produce. An image gamut is the range of colors in a particular image.

gamut mapping
The process whereby the color management software compresses—"maps"—the colors in a digital image to fit the color gamut of a particular device.

gradient
A smooth transition between two different colors or between two shades of a color.

Graphics Device Interface (GDI)
Graphics and display technology used by computers running Windows. GDI applications rely on GDI (rather than the PostScript language) to send words and pictures to printers.

gravure
A printing technology that uses an etched cylinder that has been immersed in ink. The ink that remains in the etched areas is applied to the paper. The raised surfaces of the cylinder are non-printing areas.

halftoning
A method for representing an original continuous tone image using a pattern of dots of various sizes.

metamerism
Phenomenon in which two colors composed of different combinations of light wavelengths appear identical. The colors are called "metamers."

moiré
An undesirable pattern in images made using halftone screens. Moiré can be caused by improper screen angles, improper alignment of halftone screens, or by the combination of a halftone screen with patterns in the image itself.

named color
A color that is defined according to a custom color system. For example, PANTONE 107 C is a named color.

office applications
Software applications commonly used for business purposes, including presentation applications, spreadsheets, and word processing programs.

offset lithography
Printing in which ink is transferred from printing plates to a rubber blanket and then from the blanket to paper.

phosphors
Materials used in making computer monitors.

photographic rendering
A color rendering style that preserves tonal relationships in images. Unprintable colors are mapped to printable colors in a way that retains differences in lightness, slightly sacrificing color accuracy as necessary.

pixel
The smallest distinct element of a raster image or an image displayed on a monitor. The term is a combination of the words "picture" and "element."

PostScript
Adobe Systems' computer language for defining text and pictures. The current version is PostScript 3. PostScript Level 2 included many enhancements to PostScript Level 1 including improved color matching and the ability to control printer-specific features from applications. EPS (Encapsulated PostScript) images are PostScript files.

PostScript Printer Description file (PPD)
A file containing information about a particular PostScript print device's capabilities and restrictions. The information in the PPD is presented to you via the printer driver.

prepress proof
A print made from a set of film separations, or from an electronic file, to simulate the results of printing. A film proof is the last opportunity to catch problems before the final printing.

presentation graphics rendering
A color rendering style that does not try to precisely match printed colors to displayed colors. It is appropriate for bright saturated colors used in illustrations and graphs.

process colors
The four ink colors used in printing to simulate full-spectrum color images: Cyan, Magenta, Yellow, and blacK (CMYK).

profile
A digital file that describes the color capabilities, including the gamut, of a color device.

QuickDraw
Graphics and display technology built into Macintosh computers. QuickDraw applications rely on QuickDraw (rather than the PostScript language) to send words and pictures to printers.

raster image
Electronic representation of a page or image using a grid of points called pixels.

rendering intent
A style of color rendering, or gamut mapping, designed for a particular type of color job. An example of a rendering intent is Photographic rendering—also referred to as Image rendering or Contrast rendering—which is designed for photographic images.

resolution
The number of pixels per inch in a bitmap image or the number of dots per inch that an output device can print.

solid color rendering
A color rendering style intended for use when color accuracy is crucial. Unprintable colors are mapped to the closest printable colors. Solid color rendering does the best job of preserving the saturation of displayed colors.

source color space
The color environment of the originating source of an image, including scanners and color monitors.

source profile
A profile used by the color management system to determine the context for the color values specified in a digital image.

spectral light
The wavelengths of electromagnetic radiation emitted by a given light source that can be seen by the human eye.

spot color
A color that is printed on its own separation plate when separations are specified. A spot color is printed using a special ink for that color, in contrast to process colors that are printed using combinations of cyan, magenta, yellow, and black.

subtractive color model
A system in which color is produced by combining colorants such as paint, inks, or dyes on media such as paper or transparent film or acetate. All printing devices use the subtractive color model.

subtractive primaries
Cyan, magenta, and yellow colorants used in subtractive color systems for color printing. Combining the subtractive primaries produces darker colors. Black is added to the subtractive primaries to compensate for deficiencies of the toners or inks, and for more efficient black printing.

SWOP
The abbreviation for Specifications for Web Offset Publications. A standard of specifications for separations, proofs, and color printing.

trapping
The practice of adjusting the borders of adjacent images that do not share common colors. Trapping compensates for misregistration of inks or toners during printing.

vector image
Graphic illustration created on computers where picture elements are defined mathematically as lines or curves between points. These mathematical definitions are interpreted by a computer language such as PostScript. Vector images include artwork created with illustration applications (such as Illustrator or FreeHand) and page layout applications (such as PageMaker).

white point
The color temperature of a color monitor (or any white light source), typically expressed in degrees Kelvin (for example, 6500 K).

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